

Exhibit J

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DOCUMENT TO BE SEALED)

Exhibit 43

(Submitted Under Seal)

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN**

JASON COUNTS, et al.,

Plaintiffs,

v.

GENERAL MOTORS LLC,
ROBERT BOSCH GMBH, and
ROBERT BOSCH LLC,

Defendants.

Case No. 16-cv-12541-TLL-PTM

EXPERT REPORT OF LORIN HITT, PH.D.

June 5, 2020

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1. QUALIFICATIONS

1. My name is Lorin Moultrie Hitt. I am the Zhang Jindong Professor of Operations, Information and Decisions (OID) at the University of Pennsylvania, Wharton School. As a member of Wharton's Information Strategy and Economics Group (ISE), my research and teaching focuses on the effect of information and changes in information on consumer behavior, firm organization, competition, and market structure.

2. I received my Ph.D. in Management from the Massachusetts Institute of Technology Sloan School of Management in 1996, and my Sc.B. (1988) and Sc.M. (1989) degrees in Electrical Engineering from Brown University. The majority of my Ph.D. coursework was in economics and statistics, and my doctoral dissertation was supervised in part by Zvi Griliches (Harvard), a former Chairman of the American Economic Association and a pioneer in methods for understanding the relationship between prices and quality change in complex products. I am a member of the American Economic Association (AEA), INFORMS (Operations Research and Management Science Society), Sigma Xi (Scientific Research Society), and Tau Beta Pi (Engineering Honor Society).

3. I have taught undergraduate, masters, doctoral, and executive education level courses at the University of Pennsylvania and the Massachusetts Institute of Technology on competition and pricing in a variety of commercial and consumer markets, economics and management of technology, and data analysis. In my Ph.D. seminar, I cover a variety of empirical methods used in economic research, including methods for estimating product demand and supply, pricing products, measuring the effect of external events on market prices, and valuing individual product features in differentiated products using techniques developed by both econometricians and marketing researchers. I am an eleven-time winner of the Wharton Undergraduate Teaching Award, and have received the Wharton-wide Hauck Award and University-wide Lindback Award for distinguished teaching.

4. My research is characterized by rigorous economic analysis and I am well-versed in econometric and statistical methods. Many of my published papers involve methods for determining the value of services of capital goods using empirical methods. In addition, several of my published research papers focus specifically on modeling demand in consumer and commercial markets, assessing these models using market data, and using this information for pricing or product design. My research has been published in top tier economics and management journals, including *The Quarterly Journal of Economics*, *The Review of Economics and Statistics*, *The Journal of*

Economic Perspectives, Brookings Papers on Economic Activity, Management Science, Information Systems Research and a number of other top-tier outlets.

5. I formerly served as a Department Editor at *Management Science*, and as a reviewer for a number of management and economics journals including *American Economic Review, The Quarterly Journal of Economics, Information Economics and Policy, Journal of Industrial Economics, Journal of Law, Economics, and Organization, Managerial and Decision Economics, Marketing Science, The Review of Economics and Statistics, MIT Sloan Management Review*, among others.

6. I have prior experience in litigation matters where I assessed the value of a product or product features, including products such as automobiles, trucks, furniture, refrigerators, wet-dry vacuum cleaners, and flat panel televisions and information technology products such as smartphones, tablets and personal computers. My expert opinions in these matters have been accepted in Federal, State and City Courts.

7. I have specific experience in consumer class action matters, including the use of hedonic price analysis, conjoint analysis, other types of consumer surveys, and the analysis of market price data for the purposes of class certification and measurement of economic injury.

8. I also have experience in the automobile industry. I previously worked on litigation matters involving the use of market data to estimate the effect of an alleged product defect and/or alleged misrepresentations on product value and market prices of automobiles, diesel trucks and all-terrain vehicles (ATVs).

9. My Curriculum Vitae is attached as **Appendix 1** and a list of my testimony in the past five years is attached as **Appendix 2**.

2. BACKGROUND AND ASSIGNMENT

10. Plaintiffs in this matter allege that the 2014 and 2015 Model Year Chevrolet Cruze diesel vehicles (the “Subject Vehicles”) are equipped with “defeat devices,” such that in real-world driving conditions they emit more NOx than legally allowed or than a reasonable consumer would expect (the “alleged defect”).¹ Plaintiffs claim that they and “members of the class paid a premium for a diesel Cruze,” and that had “[they] and Class members known of the higher emissions at the time they purchased or leased their Affected Vehicles, or had they known of the effects on fuel economy if the emissions were not manipulated, they would not have purchased or leased those vehicles, or would have paid substantially less for the vehicles than they did.”² Plaintiffs also claim that they have “been harmed and injured by the fact that they unwittingly drove vehicles that were not legally on the road and unwittingly drove vehicles that were polluting in volumes and manners a reasonable consumer would not expect.”³

11. I understand that the Court has ruled that Plaintiffs may have a claim only if GM failed to disclose the presence of the alleged “defeat device” (the “alleged misconduct”). I also understand that GM denies that its Cruze vehicles had “defeat devices.”

12. Plaintiffs propose a class (the “Proposed Class”) comprising of, “[a]ll persons who purchased or leased a [Subject] Vehicle.”⁴

13. Plaintiffs’ expert, Mr. Edward M. Stockton, submitted an expert report where he opined that (i) “[c]onsumers overpaid at the time of the purchase of their Subject Vehicles”; (ii) “[a]ccepted economic concepts and models can describe and quantify this overpayment”; and (iii) “[i]t is possible to implement these methods and apply these concepts on a class-wide basis without the benefit of individual inquiry.”⁵

14. Mr. Stockton proposed three methodologies, which, according to him, seek to award economic damages to consumers under a “benefit of the bargain” theory on a

¹ First Amended Class Action Complaint, *Jason Counts et al., individually and on behalf of all others similarly situated, Plaintiffs, v. General Motors LLC et al., Defendants*, June 11, 2018 (“First Amended Complaint”), ¶¶ 2, 10–22.

² First Amended Complaint, ¶¶ 217–218.

³ First Amended Complaint, ¶ 219.

⁴ First Amended Complaint, ¶ 229.

⁵ Expert Report of Edward M. Stockton, M.S., October 28, 2019 (“Stockton Report”), ¶ 5.

class-wide basis:⁶ the “Direct Price Premium model,” the “Regression Pricing model” (collectively, “Overpayment Models”) and the “Retail Replacement Cost model.”⁷ The Overpayment Models he created purportedly estimate the amount the Proposed Class members overpaid for each new Subject Vehicle.⁸ The Retail Replacement Cost model purportedly seeks to compensate the Proposed Class members by an amount that equals the “additional money” a Proposed Class member would have to pay to replace the Subject Vehicles with a comparable non-defective vehicle plus compensation for the time that would have to be spent to acquire the replacement vehicle.⁹

15. I have been asked by counsel for GM to review and respond to Mr. Stockton’s opinions. In particular, I have been asked to: (i) assess whether Mr. Stockton established on an individual or class-wide basis that the Proposed Class members “overpaid at the time of the purchase of their Subject Vehicles”¹⁰—i.e., whether they suffered economic harm; and (ii) evaluate the validity and reliability of the damages methodologies created and proposed by Mr. Stockton for purportedly quantifying the alleged economic harm on an individual or class-wide basis.

16. As part of my assignment, I have reviewed academic literature, industry research, case depositions, disclosures and other relevant publicly available documents, as well as other documents produced in this litigation.

17. **Appendix 3** lists the materials I have relied on in forming my opinions in this matter. I have also relied upon my education, professional experience and expertise,

⁶ When introducing his concept for “Modeling Economic Damages,” Mr. Stockton stated, “[a] baseline level of consumer satisfaction occurs when the buyer receives the *benefit of the bargain*. The *Merriam Webster Legal* definition of the benefit of the bargain is the point at which the consumer reaches ‘the advantage that would have been gained under a contract if completed as agreed.’ Accordingly, economic damages calculated under a benefit of the bargain concept are those that restore the consumer to the position he or she would have been in had the seller fulfilled the transaction as agreed [emphasis in original].” See Stockton Report, ¶ 20. See also Deposition of Edward M. Stockton, M.S., February 7, 2020 (“Stockton Deposition”), 16:23–17:13 (“Q. Okay. Well, let me ask you: I understand you’re not an attorney. As -- in your expertise, would you consider your damages model opinion in this case to be benefit of the bargain? MR. WOJTANOWICZ: Objection. Objection; calls for a legal conclusion. A. Damage Model No. 3 [Retail Replacement Cost model] is clearly benefit of the bargain. I think it would be fair to characterize the first two models [the Direct Price Premium model and the Regression Pricing model], which are overpayment models, also as benefit of the bargain. But there is a technical distinction in that they compensate consumers for tolerance of the defects rather than fulfilling the transaction. So they get a product plus money, which whether that is technically benefit of the bargain is not a particularly important distinction. But there is a slight difference between the models.”)

⁷ Stockton Report, ¶¶ 11–12.

⁸ Stockton Report, ¶ 11; Stockton Deposition, 113:8–16 (“Q: Is it correct that under your model as it stands now that each and every member of the class purchasers of 2014 Chevy Cruze vehicles will get the same amount of damages regardless of whether they owned or leased the vehicle? A. I’ve -- again, I’ve calculated the -- the original overpayment amount and that is on a per vehicle basis across all new retail registrations. What eventually happens in court, I don’t know.”).

⁹ Stockton Report, ¶ 47.

¹⁰ Stockton Report, ¶ 5.

obtained over many years as a professional and academic economist. I reserve the right to supplement or amend my opinions if I receive additional information that warrants such a supplement or amendment.

18. I am being compensated at my usual rate of \$875 per hour. I am being assisted in this matter by staff at Cornerstone Research who are working at my direction. I receive compensation from Cornerstone Research based on its collected staff billings for its support of me in this matter. Neither my compensation in this matter nor my compensation from Cornerstone Research is in any way contingent on the content of my opinion or the outcome of this or any other matter. My work in this matter is ongoing and I reserve the right to update my opinions as additional information becomes available.

3. SUMMARY OF OPINIONS

19. Based upon my qualifications, experience, and review and analysis of the materials described herein, I have reached each of the following opinions to a reasonable degree of economic certainty.

20. Mr. Stockton purported both to determine whether Proposed Class members sustained economic injury, and to measure the damages sustained by the individual Named Plaintiffs and the Proposed Class members in three ways. Mr. Stockton's methodologies, analyses and conclusions are structurally flawed because they compensate Proposed Class members who were not harmed and because they do not even apply to a large subset of the Proposed Class. Moreover, even if applicable, his models are unreliable and speculative because they are based on assumptions that have no support in the factual record or academic literature, bear little resemblance to the actual world, and in fact are demonstrably false and contradicted by actual vehicle transaction data.

3.1. Mr. Stockton's damages models "compensate" members of the Proposed Class who would not have sustained any economic harm, and none of his models can possibly calculate damages on a class-wide basis or for certain individual Plaintiffs

21. Mr. Stockton claimed that he attempted to calculate damages "for consumers who suffered economic loss as a result of their purchase or lease of the Class Vehicles,"¹¹ which includes both new and used car purchasers.¹² However, Mr. Stockton's damages models compensate all Proposed Class members, including the many who under his models could *not* and did not sustain any economic harm. For instance, his models award damages to Proposed Class members who fall into one or more of the following categories:

- Proposed Class members who have already recovered any alleged overpayment in its entirety when they resold their Subject Vehicles. For instance, actual market data show that, on average, those who resold their MY2014 Subject Vehicles likely recovered between [REDACTED] percent of the \$2,337 alleged overpayment estimated by Mr. Stockton's Direct Price Premium model. In fact, actual transaction data show that [REDACTED] of the MY2014 Subject Vehicles were traded-in at less than 50,000 miles; for such vehicles, on average, the likely recovery was between [REDACTED] of the \$2,337 overpayment estimated by Mr. Stockton's Direct Price Premium

¹¹ Stockton Report, ¶ 24.

¹² First Amended Complaint, ¶ 229 ("All persons who purchased or leased a [Subject] Vehicle.").

model. A consumer who recovered 100% or more of Mr. Stockton's alleged overpayment from the sale of her Subject Vehicle was not economically harmed.

- Proposed Class members for whom the economic value of the benefits they actually received from purchasing the Subject Vehicles (relative to the gasoline comparators Mr. Stockton proposed and used in his models), such as greater torque, better mileage, and greater engine longevity equaled or exceeded the initial overpayment estimated by Mr. Stockton. In fact, Mr. Stockton's own (structurally flawed) Regression Pricing model predicts *negative* damages if one accounts for just the additional torque the Subject Vehicles provided relative to the gasoline comparators Mr. Stockton used in his models.
- Proposed Class members for whom the Subject Vehicle's emissions system was not a factor in their decision to purchase the vehicle. Such consumers would not likely have altered their behavior if the alleged defect had been disclosed, and because each vehicle price is individually negotiated, they may have paid the same price for their Subject Vehicles even if the alleged defect had been disclosed. Therefore, Mr. Stockton's models do not show that such Proposed Class members were likely harmed. For example, Proposed Class members who installed diesel engine tuner devices in their Subject Vehicles, knowing that those devices disabled portions of the vehicle's emissions system, have much less or no concern for emission-related attributes because they *paid* more for a less effective emissions system. This shows that it is unlikely that they were harmed by the alleged defect that reduced the effectiveness of their emissions systems.

22. Moreover, none of Mr. Stockton's models can predict damages for a substantial proportion of the Proposed Class because he did not even attempt to model many types of transactions, that make up a substantial portion of the Proposed Class members' transactions. For example, Mr. Stockton's Overpayment Models do not even purport to estimate damages for:

- Those who purchased *used* Subject Vehicles (accounting for [REDACTED] of all Subject Vehicle transactions), including each owner of a Subject Vehicle that was resold more than once.
- Those who *leased* their Subject Vehicles (accounting for [REDACTED] of all Subject Vehicle transactions).
- Those who *financed* their Subject Vehicles (accounting for [REDACTED] of all transactions).

23. Similarly, Mr. Stockton's Retail Replacement Cost model cannot predict damages for:

- Those who traded-in their Subject Vehicle before this case was filed (because they would have done so for reasons unrelated to the allegations in this matter).
- Those who will never trade-in their Subject Vehicles.
- Those who have totaled their Subject Vehicles (because they will have no vehicle to trade-in).

24. Mr. Stockton testified that he only calculated damages for new Subject Vehicles, and that all “allocation” problems among differently situated Proposed Class members (e.g., those who purchased new versus used Subject Vehicles) can somehow be addressed later on in the case. However, these “allocation” problems cannot be brushed away for consideration at some later date because different types of transactions (e.g., *used* Subject Vehicles) involve different supply and demand conditions compared to *new* Subject Vehicles purchased through a lump-sum cash payment. Therefore, they cannot be assumed to have suffered any economic harm, much less the same damages as *new* Subject Vehicles purchased through a lump-sum cash payment. Thus, Mr. Stockton did not provide a methodology that can determine the existence of economic injury for the Proposed Class, did not provide any methodology or models that can reliably measure total damages for the Proposed Class, and did not provide any methodology whatsoever (let alone an economically reliable one) that is capable of determining the existence of economic injury and the amount of damages (if any) to each member of the Proposed Class.

25. Moreover, even for transactions for which Mr. Stockton’s models may be applicable, these models and their results are structurally flawed and unreliable for numerous reasons discussed below.

3.2. Mr. Stockton’s damages models rely on unsubstantiated, demonstrably false, and/or speculative assumptions that render his opinions and damages estimates unreliable

26. First, Mr. Stockton *assumed*, as instructed by his counsel, that the alleged emissions defect is material and that each Proposed Class member sustained economic harm. However, there is no empirical basis in the record for the *assumption* that the alleged defect is sufficiently material to affect market prices or that even if material, that each and every Proposed Class member suffered any injury. In other words, instead of empirically testing whether the alleged defect was material and harmed each Proposed Class member, Mr. Stockton simply assumed, upon instruction and otherwise without any basis, that it is and that it does. In short, nothing in Mr. Stockton’s work or methodologies established the existence of economic injury for any Proposed Class member, much less economic injury for *all* such members.

27. Second, as Mr. Stockton conceded, his Overpayment Models do not calculate a “clean diesel” premium.¹³ In other words, he did not attempt to isolate the alleged premium that members of the Proposed Class paid for the diesel emissions system, which is the only element of the diesel engine that Plaintiffs allege is defective. Rather, Mr. Stockton’s Overpayment Models attempted to calculate any additional payment consumers made for the *entire* “bundle” of the diesel engine features possessed by the Subject Vehicles, which are not present in the gasoline comparators that Mr. Stockton’s models used, including greater torque, better mileage, greater engine longevity, and greater resale value. In doing so, he ignored that the Proposed Class members *actually received* the incremental economic benefits of these non-emissions-related “bundled” features, and awarded them damages as if they had lost all those incremental benefits as a result of the alleged emissions defect. This “bundle theory” is economically and logically nonsensical. It does not produce a measure of damages that identifies any injury at all, much less one that compensates Proposed Class members due to the alleged misconduct (related to the alleged emissions system defect), and is generally unreliable as a matter of common sense and economic theory. Indeed, the facts of the case and the logical inconsistency of Mr. Stockton’s own analyses demonstrate the absurdity of his bundling assumption. For example:

- The Chevrolet Cruze Eco (“Cruze Eco”), the gasoline-powered car that Mr. Stockton used as a comparator, has a *better* EPA Smog Rating compared to the Subject Vehicles. The Smog Rating was disclosed on the vehicle sticker of the Cruze Eco and Subject Vehicle, such that prospective consumers knew or could have known that the Cruze diesel had *higher* NOx emissions than the Cruze Eco. Since members of the Proposed Class actively chose *not* to purchase the Cruze Eco in the actual world, it shows that they valued the incremental benefits that the diesel engine of the Subject Vehicles provided (such as greater torque and mileage) more than the gasoline Cruze Eco’s incremental NOx emissions benefits. Therefore, any premium they paid for their Subject Vehicles relative to the Cruze Eco reflects, at least in part, the value Proposed Class members derived from those incremental benefits—economic benefits that they indisputably received and that Mr. Stockton completely ignores.
- Furthermore, Mr. Stockton’s reliance on his bundling approach is directly contradicted by his Regression Pricing model, which presumes that it is possible to measure how the components of “bundled” goods affect price and where his results (taken at face value and in his own interpretation) indicate that a vehicle attribute, horsepower, is an important determinant *on its own* in explaining the difference in prices between Subject Vehicles and their gasoline counterparts. His approach is logically inconsistent and contradictory. Moreover, when I account for a vehicle’s

¹³ Stockton Report, ¶ 26.

torque in Mr. Stockton's Regression Pricing model it predicts that the entire diesel engine premium of the Subject Vehicles can be explained by their greater torque, which implies no damages under his Regression Pricing model.

28. Third, Mr. Stockton's Overpayment Models are based on the assumption of the same transaction price and same Manufacturer Suggested Retail Price ("MSRP") for each Subject Vehicle of a given model year. Put most simply, Mr. Stockton's methodologies and models expressly assumed that each member of the Proposed Class paid the same price for her vehicle. But this assumption ignores common sense, is contrary to the actual vehicle transaction data, and is contradicted by the evidence from Named Plaintiffs themselves as well as the academic literature on the automobile market that proves, without doubt, that vehicle prices vary by individual transaction. Mr. Stockton's same-price-paid-by-all assumption also leads to his erroneous and speculative conclusion of a uniform impact of the alleged misconduct and a uniform overpayment amount for each Subject Vehicle. For example, in his Overpayment Models, he assumed a single, uniform transaction price of \$23,065 paid by all Proposed Class members for all new MY2014 Subject Vehicles, and on that basis he concluded that all the Proposed Class members that purchased a new MY2014 Subject Vehicle suffered damages, and did so in the identical damage amount of \$2,337 (according to his Direct Price Premium model) or \$2,834 (according to his Regression Pricing model). Similarly, in his Retail Replacement Cost model, Mr. Stockton assumed a uniform difference between retail and trade-in values of \$2,475 and \$2,900 for the MY2014 and MY2015 Subject Vehicles respectively.

29. By assuming uniform prices, uniform existence of economic injury, and uniform damages for all Proposed Class members, Mr. Stockton ignored the known facts regarding differences in the purchase and trade-in prices of the Subject Vehicles due to myriad market conditions on the demand and supply side — facts that preclude his assumptions regarding uniform price, impact, and damages. Some of the differences on the demand side include differences in: (i) consumers' preferences for vehicles' attributes, (ii) information sources, (iii) appetite to search for best bargains, and (iv) negotiation skills. Some of the differences on the supply side include (i) product differentiation, (ii) dealers' sales and pricing strategies, (iii) rebates and discounts offered, (iv) dealers' costs, (v) size of the dealer's inventory, and (vi) dealers' strategies and pricing with respect to trade-ins. In assuming uniform prices, impact, and damages, Mr. Stockton effectively asserted that Proposed Class members and their transactions are identical in these inherently differing demand and supply side factors. However, this assertion is inconsistent with and contradicted by academic literature and evidence in this case.

30. Evidence from the actual transaction prices of the Named Plaintiffs, as well as available market-wide data, illustrates this heterogeneity in consumer circumstances and prices paid, and that Mr. Stockton's damages estimates are unreliable because they lack face validity. For instance, contrary to Mr. Stockton's assumptions:

- Named Plaintiffs paid very different transaction prices for their Subject Vehicles. For instance, when purchasing a MY2014 Subject Vehicle, Plaintiff John Miskelly paid \$21,045 while Plaintiff Joshua Rodriguez paid \$32,916. In contrast, Mr. Stockton's calculations relied on estimating a common price for all MY2014 Subject Vehicles, based on a common MSRP value. However, even if the relationship between MSRP and transaction price were constant for a given model year of Subject Vehicle (which demonstrably is not true), market data contradict this assumption of a uniform MSRP. For instance, the MSRPs for MY2014 Subject Vehicles varied between [REDACTED] contrary to the single price of \$26,121 Mr. Stockton predicted in his Regression Pricing model.
- Actual market transaction data also show that even vehicles with *similar MSRPs* can have vastly different purchase prices. That is, the relationship between transaction price and MSRP varies *by transaction*. For example, even for groups of Subject Vehicles whose MSRPs differ by no more than \$500, the difference between the highest and lowest transaction prices is as much as [REDACTED]. This reflects that different consumer preferences, consumer negotiation skills, dealership circumstances, and sales strategies lead to different purchase prices, and shows that consumers would be impacted differently by the alleged misconduct.
- Evidence also shows that transaction prices vary significantly even when looking at sales *at a single dealership in a given location*. For example, transaction prices of new MY2014 Subject Vehicles sold at a single dealership in Chicago in 2014, and whose MSRPs differed by no more than \$500, varied by as much as [REDACTED].
- Mr. Stockton assumed that each member of the Proposed Class had a uniform ratio of purchase price to MSRP of 92.3% for all MY2014 Subject Vehicles and 95.8% for all MY2015 Subject Vehicles. This assumption is unfounded, and is directly contradicted by market data that show that this ratio ranges between [REDACTED] for the MY2014 Subject Vehicles, and between [REDACTED] for the MY2015 Subject Vehicles.
- Similarly, trade-in values for MY2014 Subject Vehicles traded-in within the same month may display large variation, which academic literature has shown is driven by factors such as the vehicle's mileage, its condition, and demand and supply conditions in the used car market. Indeed, in February 2018 [REDACTED].

Replacement Cost model, Mr. Stockton ignored these market realities and instead calculated his economic damages for an average vehicle in good condition that was driven an average number of miles, to be replaced by the exact same vehicle by an average resident of a State who earns average wages, and who spends an average amount of time searching for the *same* replacement vehicle as every other member of the Proposed Class. Thus, he simply *assumed* the existence of economic injury for each Proposed Class member, and then also *assumed* that economic damages are uniform across Plaintiffs instead of establishing these facts through analysis.

31. The substantial heterogeneity in individual transaction prices (including trade-in prices) reflects the unique demand and supply factors, including vehicle-level factors such as the options included, that affect each transaction. This, in turn, indicates that contrary to Mr. Stockton's assumption of uniform impact, different members of the Proposed Class would be impacted differently by the alleged misconduct. Indeed, when I apply Mr. Stockton's (deeply flawed) Overpayment Models to actual transaction data, I find that the models *overcompensate* consumers in the vast majority of the cases. For example, the Direct Price Premium model *overcompensate* [REDACTED] of MY2014 Subject Vehicle transactions and [REDACTED] of MY2015 Subject Vehicle transactions, relative to the damages Mr. Stockton would get if he used consumer-specific transaction prices and MSRPs. The findings are similar if actual transaction data are applied to the Regression Pricing model.

3.3. Mr. Stockton's damages models are structurally flawed and unreliable in additional ways

32. In addition to the unsupported assumptions discussed above that make Mr. Stockton's models unreliable and speculative, Mr. Stockton's Overpayment Models are also conceptually and empirically flawed for several additional reasons:

- First, the single transaction price—the basis for Mr. Stockton’s single transaction price to MSRP ratio and single damages estimate—is not based on actual transaction data, but rather is a composite, fictional number. Mr. Stockton created this single price using his “price build-up” methodology, a methodology that he created for this case. Specifically, he “built” the composite, fictional average transaction price starting with dealer invoice prices (one for each model year) and adjusted those prices using a series of uniform estimates, averages, and assumptions, including the following steps:

- » Subtracting a “weighted average” incentive amount from a uniform dealer invoice price (the incentive amount includes assumptions because certain data were missing altogether);
- » Subtracting a uniform average holdback of 3%;
- » Adding a uniform dealer profit (i.e., 7.3% for MY2014 Subject Vehicles and 7.1% for MY2015 Subject Vehicles) based on the average profit margin across all domestic light vehicles and dealerships (i.e. they are not GM, Chevrolet or Chevrolet Cruze specific);
- Furthermore, Mr. Stockton did not account for other considerations, such as employee discounts, other rebates or discounts a dealer may be willing to offer or a lower percentage mark-up due to excess inventory, and local competitive conditions. Given the number of assumptions, estimates and averages included in Mr. Stockton’s “price build-up” methodology, it is not surprising his estimated transaction price is not consistent with real world transaction data.
- Second, Mr. Stockton assumed a but-for world that is inconsistent with his Overpayment Models, and contrary to basic economic principles, fails to take into account the demand and supply side in his but-for world. Specifically,
 - » Mr. Stockton claimed that his overpayment estimates reflect “the difference in market value” of the Subject Vehicles even though he assumed that had the alleged defect in the Subject Vehicles been disclosed, there would be no market for them. In doing so, Mr. Stockton disregarded the basic economic fact that for there to be a market price or value, a market must exist.
 - » Mr. Stockton also failed to appropriately account for the demand and supply conditions in his hypothetical but-for world. On the demand side, in his Direct Price Premium model he assumed without any basis that Proposed Class members would purchase the Cruze Eco if the alleged defect was disclosed. Furthermore, he asserted that it is not even necessary to model the supply side in this case, and simply assumed that the competitive environment would be the same in the actual world and in the hypothetical world he assumed. There is no valid economic justification for such an assumption. Thus, Mr. Stockton failed to follow elementary economic theory by not appropriately modeling either the demand-side or the supply-side in the hypothetical world.

33. Mr. Stockton’s Regression Pricing model is conceptually and empirically flawed, and it produces unreliable overpayment estimates.

- Mr. Stockton relied on a hedonic regression model, an approach that is incapable of determining whether an individual member of the Proposed Class was harmed at all. Mr. Stockton's hedonic regression did not and cannot account for supply conditions, which renders it inappropriate for making inferences about market prices.
- Furthermore, he ignored the academic literature on how a hedonic regression model should be implemented, and also failed to properly account for the relevant demand conditions that affect vehicle prices. The academic literature shows that failure to do so results in biased, unreliable, and speculative estimates. For example, Mr. Stockton's Regression Pricing Model failed to account for vehicle attributes, such as a vehicle's curb weight and torque, that are highly correlated with its price. When I adjust his hedonic regression models to account for these variables, Mr. Stockton's overpayment estimates are substantially lower or negative, ranging from \$177 to -\$7,146 for MY2014 and from \$94 to -\$7,539 for MY2015.

34. Mr. Stockton's third model, the Retail Replacement Cost model, is structurally and empirically flawed, and it produces unreliable and speculative overpayment estimates.

- The model is nonsensical and unrelated to Plaintiffs' allegations. It will award damages for *any* used car transaction, *regardless of whether it suffers from a defect*. This is because Mr. Stockton assumed, without any basis, that the difference between a vehicle's trade-in price (the price the consumer trading in the vehicle receives) and retail price (the price at which the dealer will resell the traded-in vehicle) can be used as a measure of economic damages due to the alleged presence of a "defeat device." However, such a difference exists in the market for *every* used-car transaction, as it reflects the dealer's margins for the services they provide (e.g., cosmetic reconditioning, mechanical repairs), rather than the presence or importance of any defect or misrepresentation. The absurdity of this model is highlighted from the fact that it awards damages of at least \$3,668 for owners of the MY2017 Cruze LS Sedan—a vehicle not affected by the alleged misconduct. A method that provides reliable estimates of economic damages related to the allegations in this case must at a minimum demonstrate a causal link between the challenged conduct and prices. Therefore, it should result in no damages for non-Subject Vehicles. However, Mr. Stockton's Retail Replacement Cost model fails that requirement and, instead, estimates damages for vehicles for which no claim of defect is made.
- The model is speculative, as it assumes that every owner of a Subject Vehicle would have traded-in her vehicle in the but-for world, and it will compensate consumers for transaction costs that they either would have incurred independent of the alleged misconduct, or never incur at all. For instance, it would compensate consumers who

traded their car before the date they became “aware” of the alleged defect (e.g., “June 2016” as assumed in Mr. Stockton’s calculations) for transaction costs they chose to incur for reasons *other* than the alleged defect. Indeed, all Named Plaintiffs, except Plaintiff Thomas Hayduk and Plaintiff Oscar Zamora, still own their Subject Vehicles despite being aware of the alleged defect and alleged misconduct. In fact, Plaintiff Jason Counts testified that he has never even attempted to sell his Subject Vehicle and intends to drive it “until it’s scrapped.”¹⁴ Similarly, Plaintiff Jason Silveus also testified that he has never attempted to sell his Subject Vehicle and that he plans to use it “for its normal use, normal life.”¹⁵ Thus, the Retail Replacement Cost model will compensate owners for transaction costs they have not yet incurred and possibly never incur at all.

35. Having summarized some of the many structural problems and false assumptions with Mr. Stockton’s analysis, methodologies, and models, the balance of my report proceeds as follows. I begin with a brief overview of Mr. Stockton’s damages models (§ 4). Then, I proceed with my assessment of his models. In § 5, I explain how Mr. Stockton’s models compensate consumers who could not have sustained any economic harm and cannot calculate damages on an individual basis, much less for a significant share of the Proposed Class members. I then explain that Mr. Stockton’s damages methodologies were premised on the key but *unsubstantiated* assumption that the alleged defect would be material to and harmed each Proposed Class member (§ 6); his Overpayment Models are predicated on his conceptually flawed and economically unjustified “bundle theory,” and therefore are fundamentally unreliable (§ 7); and his damages models rely on an assumption of uniform transaction prices and uniform damages, which are refuted by evidence from Named Plaintiffs, academic literature, and actual market data (§ 8). Together, these flaws render Mr. Stockton’s damages models unscientific, speculative, and unreliable. In §§ 9–10, I discuss additional fundamental flaws in Mr. Stockton’s three damages models. In § 11, I explain that Mr. Stockton’s models cannot provide reliable damages estimates even for the Named Plaintiffs, let alone for all Proposed Class members.

¹⁴ Deposition of Jason Counts, October 1, 2018 (“Counts Deposition”), 114:16–22 (“Q. You have not tried to sell or trade in your Cruze, have you? A. No, I have not. Q. Do you have any plans to sell or trade it in any time soon? A. No, I do not. Q. Do you plan to drive the vehicle until it’s scrapped or until your daughter takes it away from you? What’s your plan? A: Yes, I plan on driving it until it’s scrapped.”).

¹⁵ Deposition of Jason Silveus, October 24, 2018 (“Silveus Deposition”), 146:19–147:11 (“Q. Other than that time, did you or anyone else make any attempts to trade in or sell the vehicle? A. No. No. Not the Cruze, no. Q. You never advertised in a newspaper or online? A No. Q Never put a sign in the window saying the car is for sale? A. No. Q Your current plan, as you testified earlier, is to use the vehicle for its normal use, normal life? A Yeah, and, you know, that’s my current plan. I haven’t felt the sting of the repair costs that have been incurred thus far on just maintaining the vehicle beyond what normal maintenance would be. When I do feel that sting, I wouldn’t be surprised if I totally did a 180. So I guess let me say it depends on how expensive it is to maintain the car beyond 75,000 miles.”).

4. OVERVIEW OF MR. STOCKTON'S DAMAGES METHODOLOGIES

36. Mr. Stockton proposed three methodologies for estimating damages, which are briefly discussed below.

4.1. Overview of Mr. Stockton's Direct Price Premium model

37. Using his Direct Price Premium model, Mr. Stockton purported to determine the alleged “overpayment” by Proposed Class members by estimating the “premium” purchasers paid for the diesel engine features of the Subject Vehicle (including its increased torque, horsepower, and fuel efficiency) as compared to a purportedly comparable gasoline engine vehicle, the Cruze Eco.¹⁶

38. First, Mr. Stockton calculated the difference in the MSRPs between the Subject Vehicles and his chosen comparator Cruze Eco model (for the respective model years).¹⁷ From that difference, he netted out the MSRP values of certain non-power train related attributes that are standard in the Subject Vehicles, but not in the Cruze Eco versions. He referred to this as a difference in the “base” MSRP price, which he attributed to the power train characteristics of the diesel engine, including its emissions system.¹⁸

39. Then, since actual transaction prices are typically some amount below MSRP, Mr. Stockton attempted to scale down (i.e., reduce) this adjusted *MSRP* difference to purportedly obtain a uniform overpayment estimate in terms of *transaction prices* of the Subject Vehicles.¹⁹

40. To do so, he estimated a fictional, single transaction price (rather than using readily available actual transaction prices), using a multistep price “build-up” methodology he developed for purposes of this litigation.²⁰ According to Mr. Stockton, he considered using average transaction price data provided by GM, but chose not to use it because those prices suggested to him (even though he did not present any analysis of dealer-level profitability)

¹⁶ Stockton Report, ¶ 11.

¹⁷ Stockton Report, ¶¶ 27–30; Stockton Report, Tab 3, p. 1. I understand that the MY2014 and MY2015 Cruze Eco are sold in two trims: (i) Eco Manual; and (ii) Eco Auto. Although Mr. Stockton did not specify in his expert report which trim he has opted for, he used the MSRP values of the Eco Auto trim in his Direct Price Premium model's overpayment calculations, for both model years. See MSN Autos, “2014 Chevrolet Cruze, ECO Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2014/pricing/eco-auto/sd-AAbLzzR>, accessed on May 31, 2020; MSN Autos, “2015 Chevrolet Cruze, ECO Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2015/pricing/eco-auto/sd-AAbLQA9>, accessed on May 31, 2020.

¹⁸ Stockton Report, ¶¶ 27–30. See also Stockton Report, Tab 3, p. 1.

¹⁹ Stockton Report, ¶¶ 34–37.

²⁰ Stockton Report, ¶¶ 34–37.

“steep discounts below net dealership costs, such that dealerships would incur marginal losses at the transaction level.”²¹ To obtain his estimate of a transaction price for each Subject Vehicle, he started with the dealer invoice price of a Subject Vehicle. He then:

- subtracted a “weighted average” dealer sales incentive amount (that includes assumptions because certain data were missing);²²
- subtracted a uniform average holdback discount received by dealers of 3%; and
- added a uniform average dealer profit of 7.3% for MY2014 Subject Vehicles and 7.1% for MY2015 Subject Vehicles, which are based on the average profit margin across all domestic light vehicles and dealerships, margins that are not even related (much less specific) to GM, Chevrolet, or the Subject Vehicles.²³

41. Using this methodology, he computed a single transaction price of \$23,986 for the MY2014 Subject Vehicles and \$24,634 for the MY2015 Subject Vehicles. Using these estimates, he calculated the transaction price to MSRP ratio to be 92.3% for the MY2014 Subject Vehicles and 95.8% for the MY2015 Subject Vehicles. Based on this, Mr. Stockton assumed that every single MY2014 and MY2015 Subject Vehicle would have sold at 92.3% and 95.8% of its MSRP respectively and multiplied the “base” MSRP difference for each Subject Vehicle by its corresponding ratio. After adjusting for inflation, Mr. Stockton estimated the alleged overpayment for *each new registration* to be \$2,337 for the MY2014 Subject Vehicle and \$2,734 for the MY2015 Subject Vehicle.²⁴

4.2. Overview of Mr. Stockton’s Regression Pricing model

42. Using his Regression Pricing model, Mr. Stockton estimated the alleged overpayment for each new registration to be \$2,834 for the MY2014 Subject Vehicle and \$2,860 for the MY2015 Subject Vehicle.²⁵

²¹ Stockton Report, ¶ 33.

²² See Stockton Report, Tab 4, p. 1 (“Incentive values for January - July 2014 are not available; values are assumed to be the same as the December 2013 and August 2014 values.”).

²³ Stockton Report, ¶¶ 34–36; Stockton Report, Tab 5, p. 1.

²⁴ Stockton Report, ¶ 13; Stockton Report, Tab 5, p. 2; Stockton Deposition, 113:8–16 (“Q. Is it correct that under your model as it stands now that each and every member of the class purchasers of 2014 Chevy Cruze vehicles will get the same amount of damages regardless of whether they owned or leased the vehicle? A. I’ve -- again, I’ve calculated the -- the original overpayment amount and that is on a per vehicle basis across all new retail registrations. What eventually happens in court, I don’t know.”).

²⁵ Stockton Report, ¶ 13.

43. He obtained these aggregate estimates as follows. First, for vehicles in the intermediate compact car segment, he estimated the relationship between the MSRP of a vehicle and five of the vehicle's attributes. He did this by estimating a linear regression of vehicle MSRPs on horsepower, brand, model year, fuel type (hybrid, diesel or gasoline), and the interaction of the Chevrolet brand and diesel fuel (Chevy x diesel).²⁶ This approach is an attempt to estimate what economists call a "hedonic regression" model.²⁷ However, Mr. Stockton's regression model is unreliable and omits important explanatory variables, such as greater torque, extent of better mileage, engine longevity, and the greater resale value of the Subject Vehicles compared to their gasoline comparators, which significantly biases his findings.

44. Using the estimates from this regression, Mr. Stockton predicted the MSRPs for the MY2014 and MY2015 Subject Vehicles with and without the diesel engine, and he attributed the difference between the two predicted values to be the "diesel MSRP premium" commanded by the Subject Vehicles.²⁸ As with the Direct Price premium model, this premium includes the premium for all features of the diesel engine (e.g., increased torque, horsepower, and longevity), not just the emissions features. Next, he followed a methodology similar to the Direct Price Premium model to net out the MSRP of non-powertrain related attributes that are standard in the Subject Vehicles, but not in the comparator vehicles. Finally, he multiplied the "diesel MSRP premium" by the same transaction price to MSRP ratio (92.3% for the MY2014 Subject Vehicles and 95.8% for the MY2015 Subject Vehicles) he used in the Direct Price Premium model, and then adjusted for inflation.²⁹

4.3. Overview of Mr. Stockton's Retail Replacement Cost model

45. Mr. Stockton's Retail Replacement Cost model purportedly calculated economic damages to be, "the additional money that would be necessary for consumers to replace their current defective vehicles with comparable non-defective vehicles, as

²⁶ Mr. Stockton uses the natural logarithm of MSRPs as the dependent variable. Stockton Report, ¶¶ 41–42; Stockton Report, Tab 6, p. 2.

²⁷ A "hedonic regression" model is a statistical technique that relates the prices of products to the attributes of these products. Here, however, Mr. Stockton did not use any actual transaction prices and, instead, used vehicles' MSRP's (i.e., list prices). See Jan de Haan and Erwin Diewert, "Hedonic Regression Methods," in *Handbook on Residential Property Price Indices* (Eurostat, 2013), pp. 49–64 at p. 51, available at <https://www.oecd-ilibrary.org/docserver/9789264197183-7-en.pdf?expires=1590757586&id=id&accname=guest&checksum=6DD4687BADFE11786809A64209CFDAD6>. See also Stockton Deposition, 176:21–177:2. ("Q. And the results of these calculations is a – an inflation adjusted regression premium that reflects damages calculated by Model 2; is that correct? A. Yes. Q. And this particular regression is a hedonic regression model. Is that fair? A. Yes.").

²⁸ Stockton Report, ¶ 43.

²⁹ Stockton Report, ¶ 45; Stockton Report, Tab 8, p. 1.

measured by the published Retail price of the Class Vehicles as of June 2016.”³⁰ Using the model, he estimated economic damages to be \$3,489 for the MY2014 Subject Vehicle and \$3,968 for the MY2015 Subject Vehicle.³¹

46. First, Mr. Stockton claimed to estimate the monetary cost to replace the vehicle as the difference between the retail price of a used Subject Vehicle as of June 2016 and the “clean trade-in” value of the used Subject Vehicle. Mr. Stockton then added estimates of any additional costs that Plaintiffs would allegedly incur when obtaining a replacement vehicle. These costs are: sales taxes on the difference between the retail price and the trade-in value; titling and documentary fees incurred when purchasing a vehicle; and an estimate of the monetary value of time spent searching for a new vehicle (collectively, “Transaction Costs”).³² In calculating these average Transaction Costs, Mr. Stockton assumed an average trade-in price and average retail price of a Subject Vehicle. He also assumed that the vehicle would be traded-in by an “average” resident of a State who earns average wages, and who spends an average amount of time searching for the *same* replacement vehicle as every other member of the Proposed Class.³³

47. As I explain in the following sections, each of the above aggregate methodologies put forth by Mr. Stockton is based upon false assumptions and is structurally flawed.

³⁰ Stockton Report, ¶ 12.

³¹ Stockton Report, ¶ 13.

³² Stockton Report, ¶¶ 47–49; Stockton Report, Tab 9, pp. 1–2.

³³ Stockton Report, ¶¶ 47–49; Stockton Report, Tab 9, pp. 1–2.

5. MR. STOCKTON'S DAMAGES MODELS "COMPENSATE" MEMBERS OF THE PROPOSED CLASS WHO WOULD NOT HAVE SUSTAINED ANY ECONOMIC HARM, AND NONE OF HIS MODELS CAN POSSIBLY CALCULATE DAMAGES ON A CLASS-WIDE BASIS OR EVEN FOR CERTAIN NAMED PLAINTIFFS

48. Mr. Stockton claimed that he was attempting to calculate damages "for consumers who suffered economic loss as a result of their purchase or lease of the Class Vehicles,"³⁴ which includes both new and used car purchasers.³⁵ However, as I explain below, his damages models (i) compensate even those Proposed Class members who have *not* sustained any economic harm under his theory; and (ii) do not calculate damages for a substantial proportion of Proposed Class members.

49. Mr. Stockton's damages models would compensate Proposed Class members who have suffered no economic harm. For instance, he awarded damages to those who fall into one or more of the following categories:

- Proposed Class members who have recovered any alleged overpayment in its entirety when they resold their Subject Vehicles. For instance, as I describe in § 7.2., depending upon the mileage at trade-in, on average, original purchasers of the MY2014 Subject Vehicle likely recovered between [REDACTED] and [REDACTED] of the \$2,337 overpayment estimated by Mr. Stockton's Direct Price Premium model, if they had traded-in their vehicles within the first 50,000 miles [REDACTED] of the MY2014 Subject Vehicles that were traded-in fall in this category.³⁶ A Proposed Class member who recovered 100% or more from the sale of the vehicle could not be economically harmed. In other words, even if Mr. Stockton were correct that Proposed Class members paid a premium for their diesel engines, including the allegedly defective emissions system, many still would not have suffered any damages because they likely recouped the overpayment amount (or greater) when they resold their vehicles.
- Proposed Class members for whom the total economic value of the benefits from purchasing the Subject Vehicles (compared to the gasoline comparators used by Mr. Stockton), such as greater torque, better mileage, and greater engine longevity equaled or exceeded the initial overpayment estimated by Mr. Stockton's Overpayment Models. As discussed in § 7 below, any premium consumers paid for their Subject Vehicles reflects the incremental benefits Proposed Class members have either already received or continue to receive from their Subject Vehicles, relative to gasoline comparators. If the economic value they received from just those

³⁴ Stockton Report, ¶ 24.

³⁵ First Amended Complaint, ¶ 229 ("All persons who purchased or leased a [Subject] Vehicle.").

³⁶ [REDACTED]

incremental benefits exceeded the claimed overpayment, they would not have been harmed. Indeed, as I explain in § 9.3.3, Mr. Stockton's own (flawed) Regression Pricing model predicts *negative* damages, if one accounts for just the additional torque the Subject Vehicles provided relative to the gasoline comparators considered by Mr. Stockton. That is, according to Mr. Stockton's own (flawed) Regression Pricing model, the entire diesel engine premium of the Subject Vehicles can be explained by the Subject Vehicles' greater torque, which Proposed Class members actually received, and therefore that they suffered no economic harm by the alleged misconduct.

- Proposed Class members for whom the Subject Vehicles' emissions system was not a factor in their decision to purchase the vehicle. Such consumers would not have likely altered their behavior even if the alleged defect had been disclosed and because each vehicle price is individually negotiated, they may have paid the same price for their Subject Vehicles even if the alleged defect had been disclosed. For example, Proposed Class members who installed diesel engine tuner devices in their Subject Vehicles, knowing that those devices disabled portions of the vehicle's emissions system,³⁷ have much less or no concern for emission-related attributes because they *paid* more for a less effective emissions system. This shows that it is unlikely that they were harmed by the alleged defect that reduced the effectiveness of their emissions systems.

50. As evidenced from the above description of Mr. Stockton's models (§ 4.1 and § 4.2), his Overpayment Models calculate damages based on MSRPs and transaction prices for new Subject Vehicles. As a result, none of his models can predict damages for a substantial proportion of the Proposed Class members, including certain Named Plaintiffs, because he does not even attempt to model any other types of transactions. For example, Mr. Stockton's Overpayment Models do not and cannot estimate *any* damages for:

³⁷ Specifically, certain diesel engine tuners like ECM programs are known to negatively affect the vehicle's emissions system. See United States Environmental Protection Agency, "Tampering & Aftermarket Defeat Devices," April 25, 2019, available at <https://www.epa.gov/sites/production/files/2019-05/documents/tampering-aftermarket-defeat-devices-2019-mcdi-mtg-33pp.pdf>, accessed on June 3, 2020, p. 13; Ohio Environmental Protection Agency, "Ohio's Vehicle Anti-Tampering Law: What You Should Know," May 2019, available at https://epa.ohio.gov/portals/27/echeck/docs/tamper_law.pdf, accessed on June 3, 2020. Indeed, there is an active market for these devices. See Futures Market Insights Presentation, "Diesel Compact Car Performance: Tuning and Engine Remapping Services Market, U.S. Industry Analysis 2014-2018 and Opportunity Assessment 2019-2029," February 2020. Furthermore, Named Plaintiffs purchased these devices. For instance, Plaintiff Derek Long installed an "ECM Program" and "DPF delete pipe" in his Subject Vehicle and Plaintiff Christopher Hemberger purchased one to install but never did. See Deposition of Derek Long, June 4, 2019, 131:24–133:10; Deposition of Christopher Hemberger, April 15, 2019, 51:2–6.

- Proposed Class members who purchased used Subject Vehicles, which, according to transaction level “PIN Data,”³⁸ account for [REDACTED] of the total transactions for all Subject Vehicles,³⁹ including each owner of a Subject Vehicle that was resold more than once. Since, as I describe in § 8.1, the demand and supply factors affecting new and used Subject Vehicles are not identical, Mr. Stockton’s assumptions and calculations based on new vehicle transactions and prices will not accurately predict damages for used vehicle purchasers who purchased at some fraction of Mr. Stockton’s average transaction price for new vehicles. In fact, the Overpayment Models do not apply even to Named Plaintiffs, Mr. Thomas Hayduk and Mr. Christopher Hemberger, because they only ever purchased used Subject Vehicles.⁴⁰
- Proposed Class members who leased their Subject Vehicles, which, according to transaction level PIN Data, account for [REDACTED] of the total transactions for all Subject Vehicles.⁴¹ Some lessees will still be making monthly payments and many will never purchase the vehicle outright, and therefore will not own their Subject Vehicle. None of Mr. Stockton’s damages models are applicable to such Proposed Class members. The Overpayment Models do not apply to them because they did not make a lump-sum one-time initial payment for their Subject Vehicles, and the Retail Replacement Cost model does not apply to them because they do not own their Subject Vehicles and therefore cannot them in the resale market.

³⁸ I obtained the transaction level data from J.D. Power’s Power Information Network database (“PIN Data”). I rely upon information for transactions involving new and used Subject Vehicles and Chevrolet Cruze Eco vehicles in the U.S between January 1, 2013 and December 31, 2018 covering 24 market areas across the United States. J.D. Power collects “daily new- and used-vehicle retail transaction data from thousands of automotive franchises.” J.D. Power, “J.D. Power and Nielsen Link J.D. Power Automatic Purchase Information to Nielsen Consumer Segmentation,” June 2, 2014, available at <https://www.jdpower.com/business/press-releases/jd-power-and-nielsen-collaborate>, accessed on June 4, 2020. The dataset contains transaction-level information including the transaction data, the vehicle price, the trade-in amount, whether a vehicle is new or used and various vehicles features (e.g., transmission), and is routinely used in academic articles analyzing the automobile market. See, for example, David W. Harless and George E. Hoffer, “Do Women Pay More for New Vehicles? Evidence from Transaction Price Data,” *American Economic Review* 92, no. 1, 2002, pp. 270–279; Walter McManus, “The Link Between Gasoline Prices and Vehicle Sales: Economic Theory Trumps Conventional Detroit Wisdom,” *Business Economics*, 3463, 2007, pp. 53–60; Randolph E. Bucklin et al., “Distribution Intensity and New Car Choice,” *Journal of Marketing Research* 45, no. 4, 2008, pp. 473–486; James M. Sallee, “The Surprising Incidence of Tax Credits for the Toyota Prius,” *American Economic Journal: Economic Policy* 3, no. 2, 2011, pp. 189–219. **Appendix 4** shows a description of the variables used in my analyses. In addition to the variables listed in **Appendix 4**, I also use transaction prices and MSRPs converted to 2019, Q2 dollars using the quarterly GDP Implicit Price Deflator series from the U.S. Bureau of Economic Analysis. See U.S. Bureau of Economic Analysis, “Gross Domestic Product: Implicit Price Deflator [GDPDEF],” available at <https://fred.stlouisfed.org/series/GDPDEF>, accessed on June 4, 2020 (“BEA Quarterly GDP Deflator”).

³⁹ See Workpaper 2.

⁴⁰ Plaintiff Hayduk’s Responses and Objections to General Motors LLC’s First Set of Interrogatories, July 11, 2017, p. 6; Plaintiff Hemberger’s Responses and Objections to General Motors LLC’s First Set of Interrogatories, October 18, 2018, p. 6.

⁴¹ See Workpaper 3.

- Proposed Class members who financed their Subject Vehicles, which, according to transaction level PIN Data, account for [REDACTED] of the total transactions for all Subject Vehicles.⁴² This is because Mr. Stockton's Overpayment Models effectively assume a single lump-sum cash payment for new Subject Vehicles. Financed vehicles are, however, subject to different economic conditions (e.g., creditworthiness of the buyer, the loan terms the dealer or bank is willing to offer). Furthermore, dealers may be willing to negotiate on the price of the vehicle if they can make up for it by charging higher interest rates. These considerations are not applicable to cash transactions. In addition, some Proposed Class members may still have debt outstanding, and thus will have paid only a fraction of the full purchase price of their vehicle. For all such cases, where the Proposed Class member has not even paid a final purchase price, let alone the single transaction prices assumed by Mr. Stockton, his Overpayment Models are not applicable.

51. Similarly, Mr. Stockton's Retail Replacement Cost model cannot predict damages for:

- Proposed Class members who have already traded-in their vehicle. As I describe in § 10.2 below, since the Retail Replacement Cost model compensates for Transaction Costs, Mr. Stockton assumes that every owner of a Subject Vehicle would have traded-in her vehicle in 2016 in the but-for world. However, this model does not apply to those Proposed Class members who traded-in their Subject Vehicle before they were aware of the alleged defect, as it would compensate them for Transaction Costs they chose to incur for reasons *other* than the alleged defect.
- Proposed Class members who will never trade-in their vehicles. For instance, those who leased their Subject Vehicles did not purchase their Subject Vehicles and therefore cannot trade them in. Furthermore, all Named Plaintiffs, except Plaintiff Thomas Hayduk and Plaintiff Oscar Zamora,⁴³ still own their Subject Vehicles, despite being aware of the alleged defect and alleged misconduct. In fact, Plaintiff Jason Counts testified that he has never even attempted to sell his Subject Vehicle and intends to drive it "until it's scrapped."⁴⁴ Similarly, Plaintiff Jason Silveus also testified that he has never attempted to sell his Subject

⁴² See Workpaper 3.

⁴³ Deposition of Thomas Hayduk, November 16, 2018 ("Hayduk Deposition"), 80:20–81:1 ("Q. And you had control over the 2014 Chevy Cruze Diesel since the time the lawsuit was first filed in June 2016, correct? A. Correct. Q. And recently you knowingly traded in that vehicle, correct? A. Correct."); [REDACTED]

⁴⁴ Counts Deposition, 114:16–22 ("Q. You have not tried to sell or trade in your Cruze, have you? A. No, I have not. Q. Do you have any plans to sell or trade it in any time soon? A. No, I do not. Q. Do you plan to drive the vehicle until it's scrapped or until your daughter takes it away from you? What's your plan? A: Yes, I plan on driving it until it's scrapped.").

Vehicle and that he plans to use it “for its normal use, normal life.”⁴⁵ Thus, the Retail Replacement Cost model will compensate Proposed Class members for Transaction Costs they have not yet incurred and may never incur at all.

- Proposed Class members who have totaled their Subject Vehicles, because they will have no vehicle to trade-in.

52. Thus, Mr. Stockton has not offered any methodology that is capable of estimating damages for *all* members of the Proposed Class or even each member of the Proposed Class, including the individual Named Plaintiffs. Mr. Stockton acknowledged he has only calculated damages for new Subject Vehicles,⁴⁶ but testified that the question of how to allocate damages across differently situated Proposed Class members (e.g., between those who purchased new versus used Subject Vehicles) can be addressed later on in the case.⁴⁷ First, Mr. Stockton directly contradicted this claim by estimating damages using his Overpayment Models for Plaintiff Thomas Hayduk and Plaintiff Christopher Hemberger, even though they have only ever purchased used Subject Vehicles.⁴⁸ More importantly, these issues are not just a matter of “allocation” because they involve different *types* of transactions (e.g., used sales, financed purchases) with different demand and supply conditions compared to new Subject Vehicles purchased through a lump-sum initial payment. Thus, Mr. Stockton has not provided a methodology that can correctly measure total damages for the Proposed Class, nor has he provided any methodology whatsoever (let

⁴⁵ Silveus Deposition, 146:19–147:11 (“Q. Other than that time, did you or anyone else make any attempts to trade in or sell the vehicle? A. No. No. Not the Cruze, no. Q. You never advertised in a newspaper or online? A. No. Q. Never put a sign in the window saying the car is for sale? A. No. Q. Your current plan, as you testified earlier, is to use the vehicle for its normal use, normal life? A. Yeah, and, you know, that’s my current plan. I haven’t felt the sting of the repair costs that have been incurred thus far on just maintaining the vehicle beyond what normal maintenance would be. When I do feel that sting, I wouldn’t be surprised if I totally did a 180. So I guess let me say it depends on how expensive it is to maintain the car beyond 75,000 miles.”).

⁴⁶ Stockton Deposition, 113:1–16 (“Q. And so you haven’t made that next determination of how it’s to be allocated among potential class members? A. I -- I have not done an allocation as of yet. Q. Have you been asked to in this case? A. I haven’t been asked to. I’ve been told that the class has not yet been certified. Q. Is it correct that under your model as it stands now that each and every member of the class purchasers of 2014 Chevy Cruze vehicles will get the same amount of damages regardless of whether they owned or leased the vehicle? A. I’ve -- again, I’ve calculated the -- the original overpayment amount and that is on a per vehicle basis across all new retail registrations. What eventually happens in court, I don’t know.”).

⁴⁷ Stockton Deposition, 110:7–111:14 (“Q: And is it correct that your models don’t make a distinction between new and used vehicle purchasers? A. I’m looking at the -- one damage calculation per vehicle, not -- not two, if there’s a new and a used sale so that the damages go with the car. Q. So you would exclude from your damages model a person who sold the car? A. No. I -- I just calculated damages associated with the car. Q. And how does that work between a -- a consumer -- consumer X was the original purchaser and consumer Y who’s the second purchaser, who gets the damages under your model? A. I have thoughts on that as an economist, and so I -- you’re asking me about prospective allocation of damages if there’s -- if there’s an award of a damage figure per car. I -- I guess I need -- I need some more help with that question. Q. Is it fair to say you haven’t -- you haven’t made a differentiation on that in your report? A. I’ve calculated one damage amount associated with each vehicle. Q. And you’re not offering an opinion on how that will be allocated where a vehicle has multiple owners? A. If you’re asking me how I would do it, there’s a very typical system for doing it. Q. I’m asking you if you have done it so far in this case? A. I haven’t proposed an allocation yet.”).

⁴⁸ First Amended Complaint, ¶¶ 35–36.

alone an economically reliable one) that is capable of determining damages to each member of the Proposed Class or even individual Named Plaintiffs.

53. Finally, even in cases where his models may be conceptually applicable, Mr. Stockton's models and their results are deeply flawed and unreliable for numerous reasons discussed below.

6. MR. STOCKTON ASSUMED THAT THE ALLEGED DEFECT IS MATERIAL TO PROPOSED CLASS MEMBERS AND ASSUMED THE EXISTENCE OF ECONOMIC DAMAGES

54. Mr. Stockton concluded that the Proposed Class members suffered economic harm as a result of the alleged misconduct.⁴⁹ That conclusion is simply a restatement of the assumption he made (as instructed by Plaintiffs' counsel) that the alleged emissions defect was material to members of the Proposed Class and that, if disclosed, would materially impact the market price of the Subject Vehicles.⁵⁰ In other words, he assumed his result, but did no work whatsoever to determine the materiality of the defect and existence of economic injury for either each of the Named Plaintiffs or the Proposed Class in general. He simply assumed both conclusions.

55. Mr. Stockton conceded at his deposition that he was "asked to assume that the...alleged defect is material to consumers."⁵¹ However, whether the alleged defect is material to purchasers of the Subject Vehicles is an empirical question, which has not been studied or answered by Mr. Stockton or established by another expert. Thus, all of Mr. Stockton's damages methodologies were premised on the key but unsubstantiated assumption that the alleged defect would be material to members of the Proposed Class. He further assumed that the alleged defect resulted in economic injury to each Named Plaintiff as well as to each member of the Proposed Class.⁵² Indeed, if the alleged defect was not important to a Proposed Class member, that member did not suffer reduced utility in the use of her vehicle, would not have changed her demand for the

⁴⁹ Stockton Report, ¶¶ 4–5 ("Plaintiffs' counsel has posed to me three questions, which represent my assignment in this matter: i. Assuming that the facts alleged in the Complaint are true, have owners and lessees of Class Vehicles (including the named Plaintiffs) suffered economic harm as a result of Defendants' misrepresentations? ii. If owners and lessees have suffered economic harm, do reasonable and accepted methods exist to identify and quantify the harm suffered? iii. In the event the answer to the second question is in the affirmative, is it possible to implement reasonable and accepted methods to describe and quantify economic harm suffered and a class-wide basis without the benefit of individual inquiry? The answer to each of Plaintiffs' counsel's questions is in the affirmative [emphasis added].").

⁵⁰ Stockton Deposition, 101:2–22.

⁵¹ Stockton Deposition, 93:4–15.

⁵² Furthermore, first, to "model" economic damages (even though he has *assumed* consumers were harmed), Mr. Stockton assumes that all consumers always make decisions according to his simplistic characterization of consumer choice theory. See Stockton Report, ¶¶ 14–15. For instance, his theory does not account for variation in information and preferences that affect consumer decision making. See, for example, Fiona Scott Morton et al., "What matters in a price negotiation: Evidence from the U.S. auto retailing industry," *Quantitative Marketing and Economics* 9, no. 4, 2011, pp. 365–402 at p. 400; and Steven Berry et al., "Automobile Prices in Market Equilibrium," *Econometrica* 63, no. 4, 1995, pp. 841–890. Second, Mr. Stockton assumes that new vehicles are completely defect free, that is, "[n]ew vehicles are assumed to be generally free of defects, safe and functional for their intended purposes." See Stockton Report, ¶ 23. However, vehicle recalls are fairly common. For example, according to the NHTSA, there were 3,476 recalls affecting 162,918,070 vehicles between 2010 and 2015 (both years included). See National Highway Traffic Safety Administration, "2018 Recall Annual Report," available at https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/2018_recall_annual_report_updated_041219.pdf, accessed on June 4, 2020. See also National Highway Traffic Safety Administration, "Motor Vehicle Safety Defects and Recalls," available at https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/14218-mvsdefectsandrecalls_041619-v2-tag.pdf, accessed on June 4, 2020.

Subject Vehicle upon disclosure, and may have paid the same price for the Subject Vehicle that she did in the actual world, and therefore would not have been economically harmed.

7. MR. STOCKTON'S OVERPAYMENT MODELS ARE FUNDAMENTALLY UNRELIABLE BECAUSE THEY ARE PREDICATED ON HIS STRUCTURALLY FLAWED AND ECONOMICALLY UNJUSTIFIED "BUNDLE THEORY" WHICH COMPENSATES PROPOSED CLASS MEMBERS FOR BENEFITS THEY ENJOYED AND CONTINUE TO ENJOY

56. According to Mr. Stockton, any incremental benefits the diesel engines of the Subject Vehicles provided drivers, relative to their gasoline comparators, were only available bundled with the alleged emissions defect in the actual world.⁵³ Therefore, in his Overpayment Models, he concluded that the appropriate metric for the alleged overpayment should equal any additional payment Proposed Class members made for the *entire diesel powertrain* of the Subject Vehicles, and not just their allegedly defective emissions systems.⁵⁴ In other words, Mr. Stockton did not isolate the premium Proposed Class members allegedly paid for the allegedly defective "clean diesel" feature of the Subject Vehicles. Rather, he estimated a premium that also included payment for the better torque, more horsepower, improved fuel efficiency, and greater longevity which they received as part of the diesel engines (relative to gasoline comparators).

57. However, as I explain below, Mr. Stockton's "bundle" approach is conceptually flawed, economically unjustified, and resulted in him assuming away incremental benefits that the Proposed Class members have *already received* as well as future benefits that affect resale prices. Hence, Mr. Stockton's Overpayment Models are fundamentally flawed and unreliable.

7.1. Mr. Stockton refuses to account for diesel-specific benefits enjoyed by drivers of the Subject Vehicles, rendering his models incapable of isolating any economic injury from the alleged misconduct

58. Mr. Stockton's "bundle" theory is conceptually flawed and has no theoretical or empirical basis for several reasons. First, the Subject Vehicles' diesel engines provide incremental benefits relative to the gasoline counterparts Mr. Stockton uses as comparators. For example, they have higher torque and better fuel economy relative to

⁵³ Stockton Report, ¶ 9 ("The defective emissions control system is integrated with the vehicles' engine components in a manner such that the collective diesel components form a 'bundle' of attributes that include both the positive perceived characteristics of the diesel engine and the defective emissions characteristics as well. These attributes of that bundle are not separable.").

⁵⁴ Stockton Report, ¶ 40 ("[A]t the point of purchase, a reasonable consumer could not have elected to receive the performance enhancements and a properly working emissions control system.... Therefore...it would be incorrect to estimate an offset for positive vehicle attributes associated with the diesel drive train because no market would exist for this vehicle. It would be possible to perform such a calculation if required, but...it is not required given the bundled nature of the defective technology and performance advantages here.").

the Cruze Eco models,⁵⁵ which he used as comparators in his Direct Price Premium model. Indeed, Mr. Stockton recognized that compared to the Cruze Eco, “[c]onsumers who have driven the Class Vehicles have received higher levels of fuel economy and likely more low-end torque.”⁵⁶ Moreover, diesel vehicles have been shown to have an average lifetime mileage of approximately 136,000 miles, compared to an average of 93,000 miles for gasoline vehicle.⁵⁷ Mr. Stockton collectively recognized these differences as benefits of diesel engines. Importantly, regardless of whether the emissions system was defective, Mr. Stockton did not deny that consumers actually received the benefit of these other diesel features.⁵⁸

59. Mr. Stockton claimed that it is inappropriate to consider such benefits and to net them out of an overpayment estimate (i.e., compute a “clean diesel” premium that addresses only the emissions attributes) because, “the difference in vehicle characteristics represented and delivered is not just the difference based on the value of the emissions levels, but also the difference between the technology that was promised and the technology delivered.”⁵⁹ However, with respect to every aspect of the diesel “bundle” other than the emissions levels, there is *no* alleged “difference between the technology that was promised and the technology delivered.” Proposed Class members *did* receive the benefit of the bargain with respect to the other features,

⁵⁵ The Subject Vehicles come with a torque rating of 264 ft-lb @ 2,000 RPM, as compared to the Cruze Eco’s 148 ft-lb @ 1,850 RPM. The Subject Vehicles come with a fuel economy rating of 27/46 (city/highway) mpg, compared to their Cruze Eco counterparts, which have a rating of 26/39 mpg. For torque ratings, see MSN Autos, “2014 Chevrolet Cruze, ECO Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2014/performance/eco-auto/sd-AAbLzzR>, accessed on May 31, 2020; MSN Autos, “2015 Chevrolet Cruze, ECO Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2015/performance/eco-auto/sd-AAbLQA9>, accessed on May 31, 2020; MSN Autos, “2014 Chevrolet Cruze, Turbo Diesel Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2014/performance/turbo-diesel-auto/sd-AAbLsbb>, accessed on May 31, 2020; MSN Autos, “2015 Chevrolet Cruze, Turbo Diesel Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2015/performance/turbo-diesel-auto/sd-AAbLSRk>, accessed on May 31, 2020. For fuel economy ratings, see MSN Autos, “2014 Chevrolet Cruze, ECO Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2014/eco-auto/sd-AAbLzzR>, accessed on May 31, 2020; MSN Autos, “2015 Chevrolet Cruze, ECO Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2015/eco-auto/sd-AAbLQA9>, accessed on May 31, 2020; MSN Autos, “2014 Chevrolet Cruze, Turbo Diesel Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2014/turbo-diesel-auto/sd-AAbLsbb>, accessed on May 31, 2020; MSN Autos, “2015 Chevrolet Cruze, Turbo Diesel Auto,” available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2015/turbo-diesel-auto/sd-AAbLSRk>, accessed on May 31, 2020.

⁵⁶ Stockton Report, ¶ 40.

⁵⁷ The Subject Vehicles may have had a longer life compared to gasoline comparators because diesel vehicles have been shown to have lifetime mileage of approximately 136,000 miles on average, compared with 93,000 miles for gasoline vehicle. See, for example, Ricardo-AEA, “Data Gathering and analysis to assess the impact of mileage on the cost effectiveness of the LDV CO₂ Regulations,” Final Report for European Commission – DG Climate Action, no. 1, September 26, 2014, available at https://ec.europa.eu/clima/sites/clima/files/transport/vehicles/docs/ldv_mileage_en.pdf, accessed on May 31, 2020, p. ii. Values in kilometers have been converted to miles.

⁵⁸ Stockton Report, ¶ 44 (“Diesel engines tend to have...higher torque relative to horsepower than gasoline engines, higher fuel efficiency than gasoline engines, although with benefits possibly offset by higher diesel fuel prices, and longer engine life than gasoline engines.”).

⁵⁹ Stockton Report, ¶ 26.

which the Plaintiffs certainly considered valuable.⁶⁰ Mr. Stockton's models nonetheless award damages to the Proposed Class members for these features as if they had lost those benefits as a result of the alleged emissions defect. They did not. Furthermore, consumers will continue to receive benefits of these attributes in the future either through continued use or through increased resale value. As I elaborate in the following subsection, this is because resale prices reflect, in part, the benefits those attributes can provide to *future* owners of the Subject Vehicles. The higher resale value of Subject Vehicles may entirely offset the overpayment estimated by Mr. Stockton.

60. Mr. Stockton's bundling theory is inconsistent with actual consumer behavior. For instance, his Direct Premium model in which Mr. Stockton assumed the Cruze Eco, which has a *better* EPA Smog Rating of 6 compared to the Subject Vehicles' rating of 5,⁶¹ to be the appropriate comparator for the Subject Vehicles. The Smog Rating was disclosed on the vehicle sticker of the Cruze Eco and Subject Vehicle, such that prospective consumers knew or could have known that the Cruze diesel had *higher* NOx emissions than the Cruze Eco.⁶² Nevertheless, Named Plaintiffs and Proposed Class members actively chose *not* to purchase the Cruze Eco, which shows that they valued the incremental benefits of the Subject Vehicles that they received (such as greater torque and mileage) more than the gasoline Cruze Eco's incremental NOx emissions benefits. . Therefore, any premium they allegedly paid for their Subject Vehicles relative to the Cruze Eco, at the very least, reflects the value Proposed Class members derived from those incremental benefits, rather than simply an overpayment for the Subject Vehicles' emission characteristics. Indeed, as discussed in § 9.3.3, Mr. Stockton's own (flawed) Regression Pricing model predicts *negative* overcharge if one accounts for the greater torque rating of the Subject Vehicles. That is, according to Mr.

⁶⁰ For example, Plaintiff Derek Long purchased the Subject Vehicle due to the "stated fuel economy and dependability." See Plaintiff Derek Long's Responses and Objections to General Motors LLC's First Set of Interrogatories, May 17, 2019, p. 7. See also Hayduk Deposition, 121:9–14 ("Q. And fuel economy was an important issue as well, correct? A. It was definitely a consideration. I mean, I think that comes part and parcel with a diesel engine. That's one of the benefits is the added miles per gallon."); Deposition of Christopher Hemberger, April 15, 2019, 8:13–9:1 ("Q. Are there other things you liked about the diesel other than reliability? A. Gas mileage. Q. Power? A. There really wasn't that much power in that car. I mean, it was definitely more powerful than the gasoline engine version of it. Q. That's what I mean -- A. Yeah. Q. -- that if you have two vehicles of otherwise the same, kind of, size and weight and one's diesel and one's gas -- A. The diesel is going to have much more power."); Deposition of Bassam Hirmiz, November 5, 2018 ("Hirmiz Deposition"), 103:16–20 ("Q. Why do you like diesels? A. They have power, they have torque, and just something about having a diesel is...Q. Fuel efficiency? A. Yes.").

⁶¹ EPA Smog Ratings referenced are for the State of California. See Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, "Compare Side-by-Side," available at <https://www.fueleconomy.gov/feg/Find.do?action=sbs&id=33578&id=33663&id=35732&id=35625>, accessed on June 4, 2020.

⁶² See United States Environmental Protection Agency, "Smog Rating," available at <https://www.epa.gov/greenvehicles/smog-rating>, accessed on June 5, 2020. See also Consumer Information, Code of Federal Regulations Title 49, pp. 198–255, available at <https://heinonline.org/HOL/P?h=hein.cfr/cfr2013220&i=208>, accessed on June 3, 2020.

Stockton's damages model, the entire diesel engine premium of the Subject Vehicles is explained by their greater torque.⁶³

61. Regardless, Mr. Stockton's bundle approach has no basis in either economic theory or empirical practice. In particular, for differentiated products, such as automobiles, economic theory recognizes that consumers have preferences over particular attributes and that the value of the good as a whole can be considered the value of its constituent attributes. This perspective, known as the "goods attributes" approach,⁶⁴ provides the foundation for empirical analysis of demand for differentiated products,⁶⁵ including the hedonic price model Mr. Stockton uses for one of his damages methodologies.⁶⁶ Thus, the theory and empirical practice of describing and measuring the demand for differentiated products indicates that consumers would consider all attributes of a product when making their product choices. Therefore, as long as the Proposed Class members *did* enjoy the incremental diesel-specific positive attributes of the Subject Vehicles relative to comparable vehicles, an economist would net those realized benefits out of any overpayment estimate.⁶⁷

62. Thus, Mr. Stockton's "bundle" theory has no economic basis.⁶⁸ By not accounting for the benefits that the Proposed Class members have already enjoyed in the actual world from his overpayment estimate (i.e., by not isolating the specific contribution of the alleged defect from all other attributes of diesel vehicles), Mr. Stockton did not provide reliable estimates of economic injury. Instead, he is double-compensating the Proposed Class members because they will get *both* the benefit of the performance enhancements (in the past and the future) *and* receive an additional recovery for the economic value of the enhancements.

⁶³ Furthermore, as discussed in § 9.3.1 below, Mr. Stockton's reliance on his "bundle" theory is directly contradicted by his Regression Pricing model given that the methodology assumes that one *can* assign prices to individual features (i.e., horsepower) of differentiated products that are sold together.

⁶⁴ Kelvin J. Lancaster, "A New Approach to Consumer Theory," *Journal of Political Economy* 74, no. 2, 1966, pp. 132–157.

⁶⁵ See, for example, Steven Berry et al., "Automobile Prices in Market Equilibrium," *Econometrica* 63, no. 4, 1995, pp. 841–890.

⁶⁶ See, for example, Ariel Pakes, "A Reconsideration of Hedonic Price Indexes with an Application to PC's," *American Economic Review* 93, no. 5, pp. 1578–1596.

⁶⁷ I also note that while Mr. Stockton claims that he has not estimated a "clean diesel" premium, he also claims that (i) his Overpayment Models separate out the positive attributes of the Subject Vehicles from the allegedly negative one; and (ii) that the "negative attribute offsets the incremental contribution of the positive attributes." See Stockton Deposition, 81:5–82:6. Mr. Stockton has no basis for making either of the two claims when he has not even attempted to quantify how much value consumers attach to the positive attributes of the Subject Vehicles.

⁶⁸ In fact, the use of the term "bundle" is inconsistent with the economic concept of bundling which specifically refers to groups of products that could be sold separately but are strategically chosen to be sold in combination (a "bundle"). See, for example, William J. Adams and Janet Y. Yellen, "Commodity Bundling and the Burden of Monopoly," *Quarterly Journal of Economics* 90, no. 3, 1976, pp. 475–498.

Contrary to Mr. Stockton's assertion, he has *not* done what a reliable economic analysis requires.

7.2. Many members of the Proposed Class who resold their vehicles likely suffered no economic damages, even if Mr. Stockton's damages models were reliable

63. Not only do the Overpayment Models fail to account for the unique benefits *drivers* of the Subject Vehicles enjoyed relative to the gasoline comparators Mr. Stockton uses, market evidence shows that those who *resold* their Subject Vehicles likely recovered a substantial share of the alleged overpayment predicted by Mr. Stockton's Direct Price Premium Model, if not more.

64. As Mr. Stockton noted, "[a] vehicle with high expected reliability and resale value presents more favorable prospects that the vehicle will perform acceptably in the future,"⁶⁹ and "[i]n a world where both depreciate, normally you would expect a more expensive car, all other things equal, to continue to be more expensive."⁷⁰ As far as I understand, there is no allegation that the Subject Vehicles depreciated faster than they would have in the but-for world. Therefore, purchasers of the Subject Vehicles who traded-in their vehicles would be expected to recover at least the undepreciated portion of any overpayment. If these consumers sold their Subject Vehicles at a price greater than what they would have sold their comparable Cruze Eco versions, they would recover some of or perhaps even the entire alleged overpayment. Indeed, the higher resale value of the Subject Vehicles would indicate that their unique benefits are also valued significantly by the purchasers of the used vehicles (consistent with the discussion above).

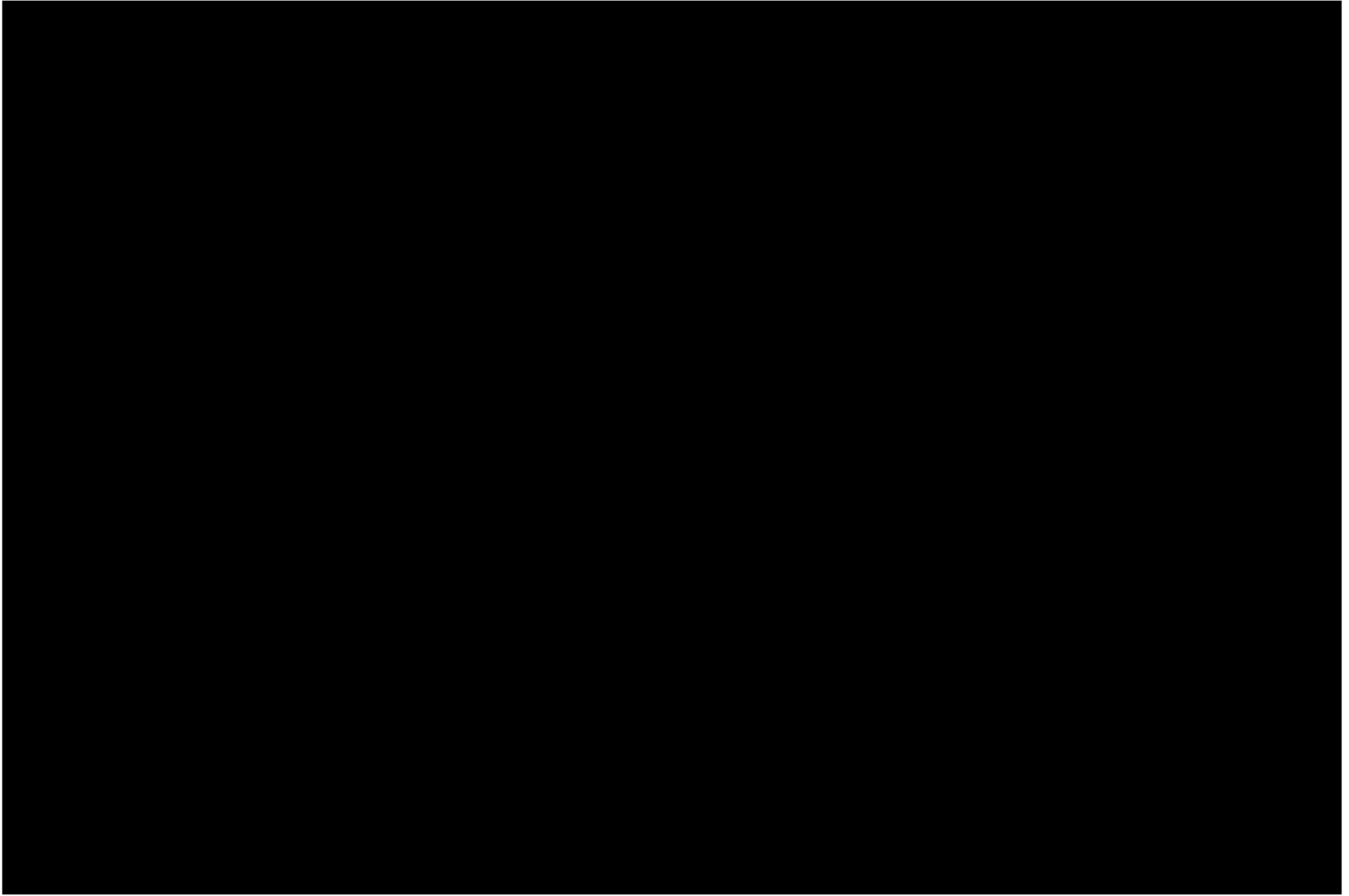
65. Exhibit 1 below depicts the difference in average resale values (i.e., trade-in prices) of the MY2014 Subject Vehicle and Cruze Eco (that is, average Subject Vehicle resale value minus average Cruze Eco resale value), using actual market transactions. The exhibit also depicts the alleged overpayment estimated by Mr. Stockton for the MY2014 Subject Vehicle using his Direct Price Premium model. To account for the vehicles' usages (to the extent possible), traded-in vehicles are grouped into mileage buckets of 10,000 miles.

⁶⁹ Stockton Report, ¶ 15.

⁷⁰ Stockton Deposition, 164:15–20 ("Q. It could -- it could explain part of the difference in price, though; is that fair? A. In a world where both depreciate, normally you would expect a more expensive car, all other things equal, to continue to be more expensive most of the time.").

EXHIBIT 1

Many of those who resold their MY2014 Subject Vehicles likely recovered more than the overpayment predicted by Mr. Stockton's Direct Price Premium model



Source: PIN data; J.D. Power PIN Glossary; BEA Quarterly GDP Deflator

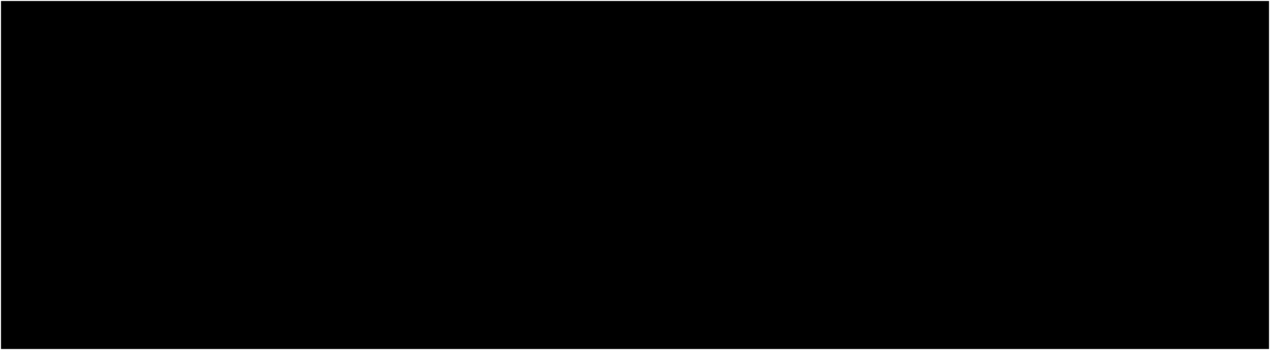
Note: Bars show the difference between the average prices of a traded-in MY2014 Subject Vehicle and a traded-in MY2014 Cruze Eco Vehicle for the different trade-in mileage buckets shown, as well as the \$2,337 alleged overpayment calculated by Mr. Stockton in his Direct Price Premium model. Although I can observe trade-in prices for a total of [REDACTED] Y2014 Subject Vehicles, this analysis relies on [REDACTED] MY2014 Subject Vehicles' transactions due to data limitation for trade-in mileage buckets greater than 100,000 miles. Trade-in prices are adjusted for inflation to 2019, Q2.

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67. Any recovery of overpayment during resale is *in addition* to the benefits the (diesel engines) drivers of the Subject Vehicles enjoyed during ownership (i.e., the benefits are cumulative). In other words, purchasers of the Subject Vehicles would have enjoyed the positive economic attributes (e.g. more torque, better fuel efficiency, etc.) during their ownership period and in addition, they would have recovered some or more than the overpayment at resale. Awarding damages to such consumers on top of these benefits would result in a windfall.

68. Exhibit 1 also shows, based on real-world pricing data, the portion of the estimated overpayment accounted for by a higher trade-in value of the MY2014 Subject Vehicles varies across the mileage ranges considered. This provides further evidence that Mr. Stockton's assumption of a uniform overpayment per Subject Vehicle (one for each model year) is inconsistent with, and indeed contrary to, the actual market data.

69. While trade-in data for the MY2015 Subject Vehicles are sparse, the available data show that those who traded-in their vehicles between 30,000 and 39,999 miles could have recovered on average  of the overpayment predicted by the Direct Price Premium model.⁷³ Such consumers would have suffered no economic injury.

70. In summary, not only have the Proposed Class members already received the benefits that the diesel engine in the Subject Vehicles provided them, but transaction data show that many members of the Proposed Class who resold their new vehicles may have recovered more than the alleged overpayment predicted by Mr. Stockton's Direct Price Premium model. By adopting his "bundle theory," Mr. Stockton chose to ignore the actual market

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⁷³ 

evidence, which shows that many consumers who resold used Subject Vehicles likely did not suffer any economic harm at all even if his Direct Price Premium model was otherwise valid. Furthermore, as discussed in § 5, Mr. Stockton did not provide any methodology for estimating the alleged damages suffered by those who purchased and resold *used* Subject Vehicles.

71. Thus, Mr. Stockton's "bundle theory" is nonsensical, does not produce a measure of damages that compensates members of the Proposed Class or individual Named Plaintiffs for the alleged misconduct, overcompensates members of the Proposed Class and individual Named Plaintiffs for the alleged misconduct, and is generally unreliable as a matter of common sense and economic theory.

8. MR. STOCKTON'S ASSUMPTIONS OF UNIFORM TRANSACTION PRICES AND UNIFORM DAMAGES ARE DEMONSTRABLY FALSE, AS CONFIRMED BY EVIDENCE FROM NAMED PLAINTIFFS, ACADEMIC LITERATURE, AND ACTUAL MARKET DATA, THUS RENDERING HIS MODELS SPECULATIVE AND UNRELIABLE

72. Mr. Stockton chose to ignore the evidence from the Named Plaintiffs, academic literature, and actual market data to assume instead that all Proposed Class members paid uniform transaction prices and all suffered economic injury and an identical amount of economic harm. His assumptions of a uniform price paid, existence of economic harm, and overpayment made by all Proposed Class members require *very* restrictive and special conditions that clearly do not hold for the Subject Vehicles. In particular, for Mr. Stockton's methodology to make any sense at all, the product itself must be *homogeneous* (i.e., identical in all product attributes, such as a particular grade of crude oil), consumers must have the same information about and preferences over these attributes, consumers must face the exact same demand-side and supply-side market conditions,⁷⁴ prices must not be individually negotiated, and as a result, all consumers must pay the same posted prices.

73. However, these assumptions do not hold true in the actual market for the Subject Vehicles—or for automobiles generally. In general, vehicles are a classic example of what are considered *differentiated* products in economics.⁷⁵ A differentiated product is one that has a variety of attributes (or “features”) that appeal to consumers with different preferences.⁷⁶ Therefore, while, like all products, the market prices of differentiated products are formed by the interaction of supply and demand, differentiated products have additional sources of variation in supply and demand that can result in variation in market prices.⁷⁷ Furthermore, vehicle prices have an additional source of variation because they are determined by individual negotiations (as opposed to, say, all consumers paying a posted price). As a result of such transaction level differences in the demand and supply conditions, any disclosure about the alleged defect in the Subject Vehicle would not have a uniform impact on all members of the Proposed Class.

⁷⁴ For instance, price elasticities have been shown to vary across differentiated products in the automobile industry. See, for example, Steven Berry et. al., “Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market,” *Journal of Political Economy* 112, no. 1, 2004, pp. 68–105 (“Berry Differentiated Products”) at 69–70.

⁷⁵ See, for example, Berry Differentiated Products at p. 68. Indeed, much of the economics literature on modeling supply and demand for differentiated products was originally directed at modeling the auto industry.

⁷⁶ Jean Tirole, “Product Differentiation: Price Competition and Non-Price Competition,” in *The Theory of Industrial Organization* (Cambridge, MA: The MIT Press, 1988), pp. 277–300.

⁷⁷ N. Gregory Mankiw, “Supply and Demand Together,” in *Principles of Microeconomics* (Boston, MA: Cengage Learning, 2007), pp. 76–82 at 76–77.

74. The following examples illustrate the effect of disregarding the *transaction-level* demand and supply considerations when estimating any alleged overpayment using Mr. Stockton's (flawed) Overpayment Models, and also highlight the absurdity of assuming a uniform impact on all Proposed Class members. Suppose the MSRP of a Subject Vehicle and a gasoline comparator were \$25,000 and \$23,000 respectively, and the \$2,000 difference was solely attributable to the presence of a diesel engine in the Subject Vehicle.⁷⁸ Further, suppose there are five consumers (A, B, C, D, and E):

- Consumer A has a strong dislike for bargaining and always pays 100% of the MSRP (obviously an oversimplification for illustrative purposes). Thus, A would have “overpaid” by the entire \$2,000 MSRP difference.
- Consumer B is a good bargainer and always manages to obtain a 20% discount relative to MSRP. Therefore, she would pay \$20,000 (80% of \$25,000) for the Subject Vehicle and \$18,400 (80% of \$23,000) for a gasoline comparator. Thus, B would have “overpaid” by \$1,600 for her Subject Vehicle (20,000 minus 18,400).
- Consumer C also has a strong dislike for bargaining and does not negotiate prices down. However, she purchases her vehicle from a dealer who has “excess” inventory of the Subject Vehicles, but does not have excess inventory of the gasoline comparator. If, because of the excess inventory, the dealer offers C a \$2,000 discount on the Subject Vehicle but no such discount on the gasoline comparator, then C would have “overpaid” by \$0 and therefore would not have been economically harmed by the alleged misconduct.
- Consumer D also has a strong dislike for bargaining and does not negotiate prices down. She purchases her vehicle from a dealer who has “excess” inventory of the Subject Vehicles, but does not have excess inventory of the gasoline comparator. Imagine, because of the excess inventory, the dealer offers D an options package whose MSRP is \$2,000 for free, but charges the full \$2,000 for the gasoline comparator. Thus, D would have paid \$25,000 for the vehicle plus options package and therefore “overpaid” by \$0 and would not have been economically harmed by the alleged misconduct.
- Consumer E also has a strong dislike for bargaining and does not negotiate prices down. However, she purchases her vehicle from a dealer who has “excess” inventory of the gasoline comparator, but does not have excess of the Subject Vehicle. If, because of the excess inventory, the dealer offers E a \$2,000

⁷⁸ This assumption is consistent with Mr. Stockton's economically flawed “bundle” theory. As I explain in § 7 above, any alleged overpayment should be estimated only on the basis of a “clean diesel” premium.

discount on the gasoline comparator but no such discount on the Subject Vehicle, E would have “overpaid” by \$4,000 using Mr. Stockton’s Overpayment Models.

75. Mr. Stockton’s aggregate methodologies, in particular his Overpayment Models, disregard any such transaction-level differences and assume a uniform damages figure that would compensate A “appropriately,” *overcompensate* B by \$400, *overcompensate* C and D by \$2,000 each, and *undercompensate* E by \$2,000.⁷⁹ Even these simple hypothetical examples, that do not include additional sources of transaction-level price variation such as the seller’s bargaining ability or variations in consumer preferences over features, yield substantial differences in “overpayment.” Only individualized inquiry can ensure that there will be no such under or overcompensation, but Mr. Stockton chose not to do it.

76. Thus, while Mr. Stockton claimed to have “determined how much less [consumers of Subject Vehicles] would have paid for their vehicles [in the but-for world],” taking into account, “the forces that generate market price[s],”⁸⁰ he did not do so. He did not do any analysis of the supply and demand conditions that underlie the Subject Vehicles’ sales and prices, and therefore, had no valid basis to make inferences about market prices in either the actual or the but-for worlds. Moreover, since Mr. Stockton did not analyze actual transactions data, he was not able to determine the prices paid in the actual world and thus had no valid basis for claiming that his analyses accounted for “the distribution of sales and purchases.”⁸¹

77. Indeed, as I show in the rest of this section, contrary to Mr. Stockton’s assumption of uniform transaction prices, actual market data show that there is substantial heterogeneity in actual transaction (purchase) prices of the Subject Vehicles (§ 8.1). Academic literature and evidence from Named Plaintiffs show that the heterogeneity is driven by numerous individual demand-side factors such as a consumer’s preferences for vehicles attributes, appetite to search for best bargains, and negotiation skills (§ 8.1.1), and numerous individual supply-side factors such as product differentiation, local market competition, dealer’s sales

⁷⁹ Setting aside all the fundamental flaws in the Overpayment Models.

⁸⁰ Stockton Deposition, 24:4–10 (“Q. And is it your testimony that that does not require consideration of both supply and demand? A. The question you asked me was more open -- open-ended than that that gave way to certain situations that -- where it was not required. In this case it is necessary to consider to understand the forces that generate market price, and I’ve done that.”); Stockton Deposition, 173:8–14 (“Q. Did you model how customers of the diesel Cruze would have -- would have behaved in the but-for world? A. Yes. Q. Okay. And how did you model that? A. So the -- what I’ve done is I’ve determined how much less they would have paid for their vehicles, and I think we’ve walked through those.”).

⁸¹ Stockton Deposition, 117:16–22. (“Q. And you would agree that -- did you assume in doing your work in this case that preferences will be the same among purchaser -- excuse me, among consumers who purchase versus those who lease products? A. No. This is overpayment at the point of purchase using analysis that takes into account the distribution of sales and purchases.”).

strategies, costs, and dealer inventory (§ 8.1.2). I also explain that Mr. Stockton ignored academic literature, evidence from Named Plaintiffs themselves as well as actual market data, and erroneously assumed a uniform impact under his Retail Replacement Cost model (§ 8.2).

78. By ignoring and assuming away all such heterogeneity in facts and actual market data in order to implement his aggregate damages methodologies, Mr. Stockton found a uniform existence of economic injury and then estimated uniform damages that are unreliable, speculative, and refuted by the actual market data.

8.1. Actual market data show that there is significant heterogeneity in the transaction prices of the Subject Vehicles, contradicting Mr. Stockton's assumption of a uniform transaction price, uniform economic injury and therefore uniform overpayment

79. In his Overpayment Models, Mr. Stockton relied on a single transaction price for each model year of Subject Vehicles: \$23,065 for *all* MY2014 Subject Vehicles and \$24,570 for *all* MY2015 Subject Vehicles.⁸² However, this assumption is contradicted by Named Plaintiff evidence and actual market data. In particular, there is substantial heterogeneity in the purchase prices paid by the Named Plaintiffs for their Subject Vehicles. For example, although they both purchased MY2014 Subject Vehicles, Plaintiff Joshua Rodriguez paid 143% of the \$23,065 assumed by Mr. Stockton, while Plaintiff John Miskelly paid only 91% of the \$23,065 assumed by Mr. Stockton.⁸³ This discrepancy contradicts Mr. Stockton's assumption of a single transaction price.

80. Similarly, Mr. Stockton's Regression Pricing model predicted a single MSRP value for each model year of the Subject Vehicles, an MSRP that he then used to estimate his "diesel premium." However, market data contradict this assumption of a uniform MSRP. For instance, the MSRPs for the MY2014 Subject Vehicles varied between [REDACTED] contrary to the unique value of \$26,121 predicted by Mr. Stockton's Regression Pricing model.⁸⁴

⁸² Stockton Report, Tab 5, p. 2; Stockton Report, Tab 8, p. 1.

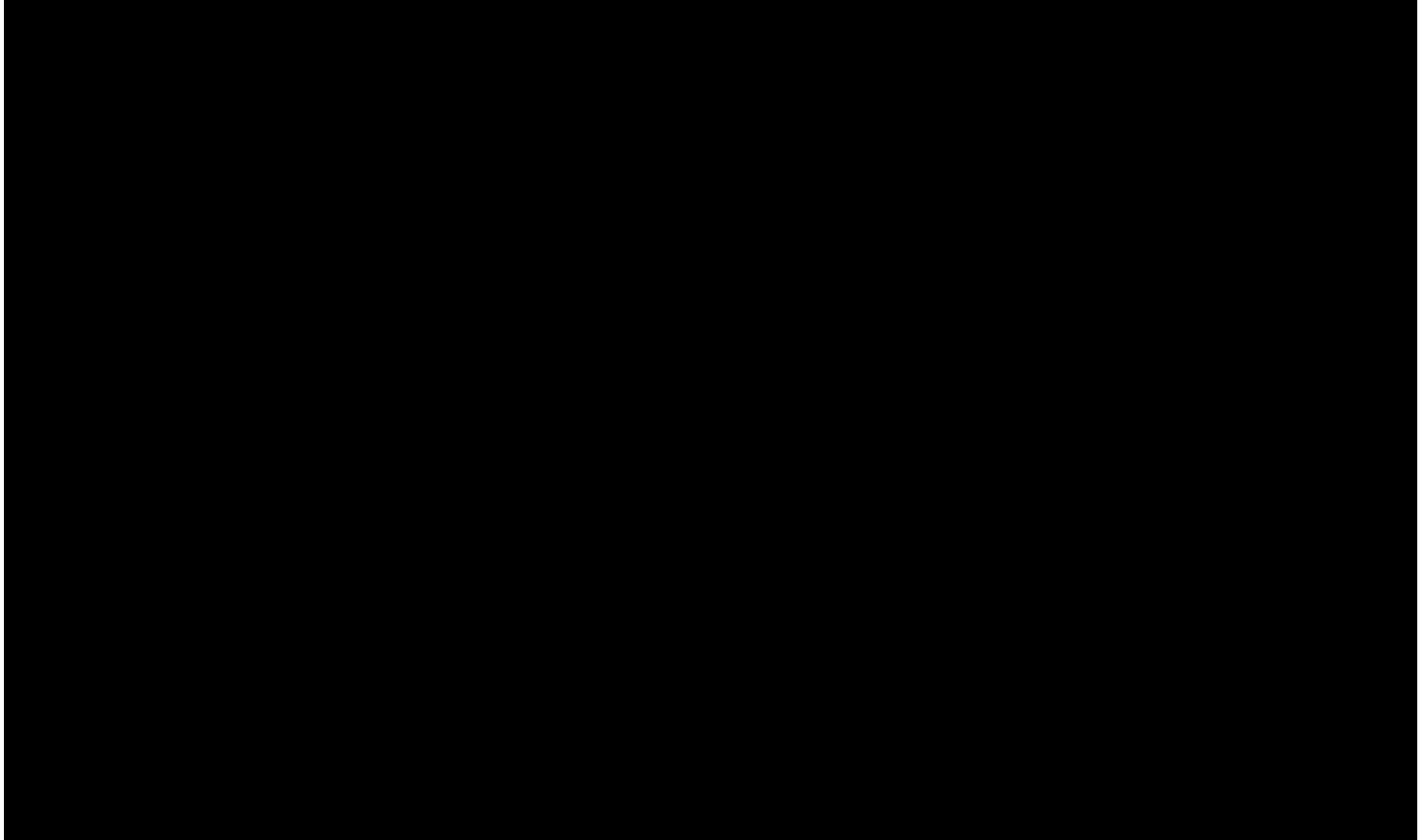
⁸³ Plaintiff Joshua Rodriguez paid \$32,916 for his MY2014 Subject Vehicle, or 143% of the \$23,065 assumed by Mr. Stockton. See Plaintiff Rodriguez's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 26, 2017 ("Rodriguez First Set of Interrogatories"), p. 6; Stockton Report, Tab 5, p. 2; Stockton Report, Tab 8, p. 1. Plaintiff John Miskelly paid \$21,045 for his MY2014 Subject Vehicle, or 91% of the \$23,065 assumed by Mr. Stockton. See Plaintiff Miskelly's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 20, 2017 ("Miskelly First Set of Interrogatories"), p. 6; Stockton Report, Tab 5, p. 2; Stockton Report, Tab 8, p. 1.

⁸⁴ See Workpaper 6. See also Produced Backup to Stockton Report.

81. Such observations also apply to the overall market for the Subject Vehicles. Exhibit 2 and Exhibit 3 below show the actual transaction prices of new and used MY2014 and MY2015 Subject Vehicles respectively (each dot represents a Subject Vehicle sold at a particular point in time).

EXHIBIT 2

Transaction prices vary significantly for MY2014 Subject Vehicles

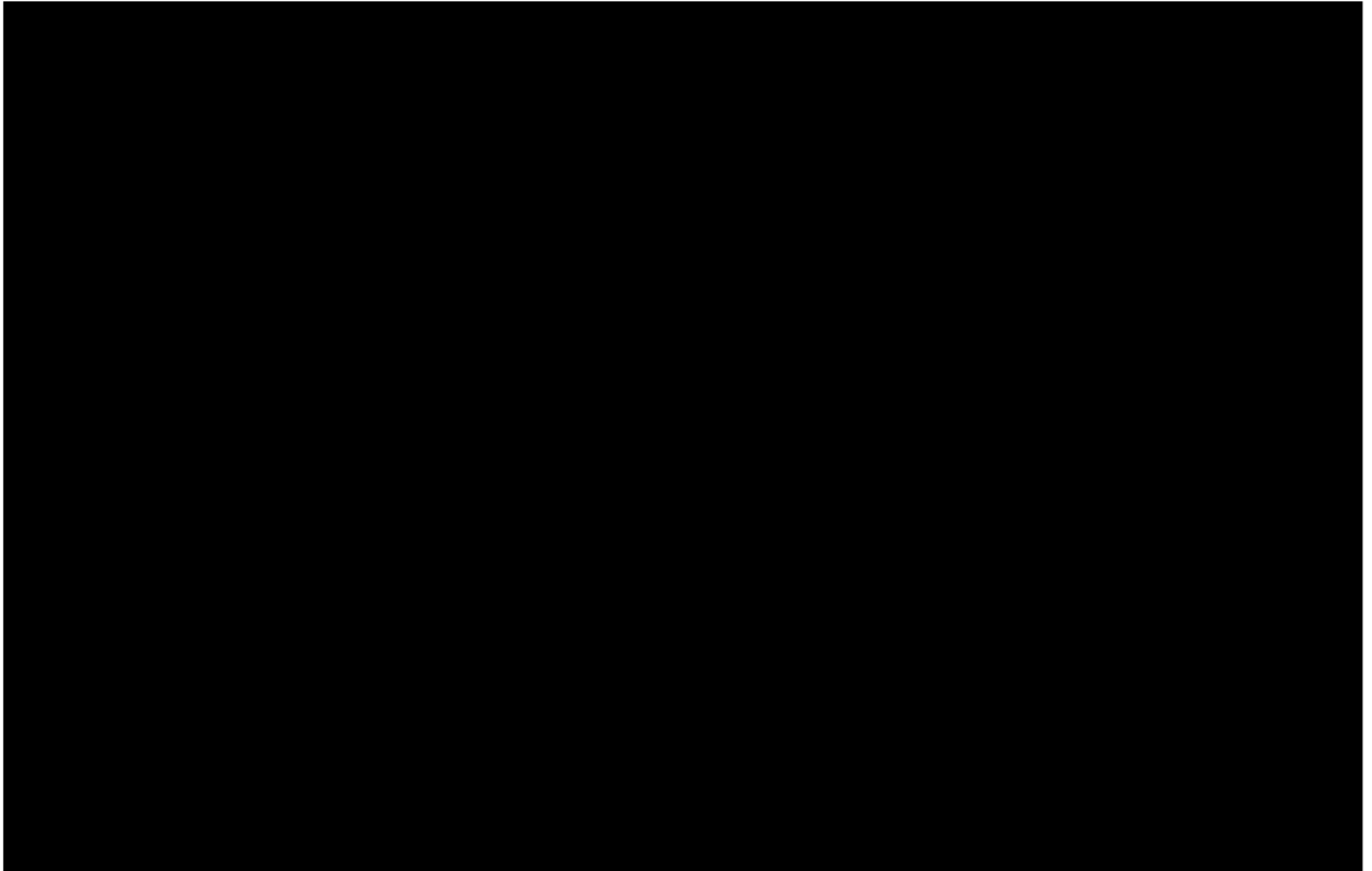


Source: PIN data; J.D. Power PIN Glossary

Note: Chart shows the nominal transaction prices of new and used MY2014 Subject Vehicles in the PIN dataset.

EXHIBIT 3

Transaction prices vary significantly for MY2015 Subject Vehicles



82. As evident in the exhibits above, there is *substantial* heterogeneity in the transaction prices of the Subject Vehicles. For example, the transaction price of a *new* MY2014 Subject Vehicle ranged from [REDACTED] and that of a new MY2015 Subject Vehicle ranged from [REDACTED]. Similarly, the transaction price of a *used* MY2014 Subject Vehicle ranged from [REDACTED] and that of a used MY2015 Subject Vehicle ranged from [REDACTED]. Thus, Mr. Stockton's assumption that there is a single "market price" for the Subject Vehicles is directly contradicted by actual transaction data.⁸⁵

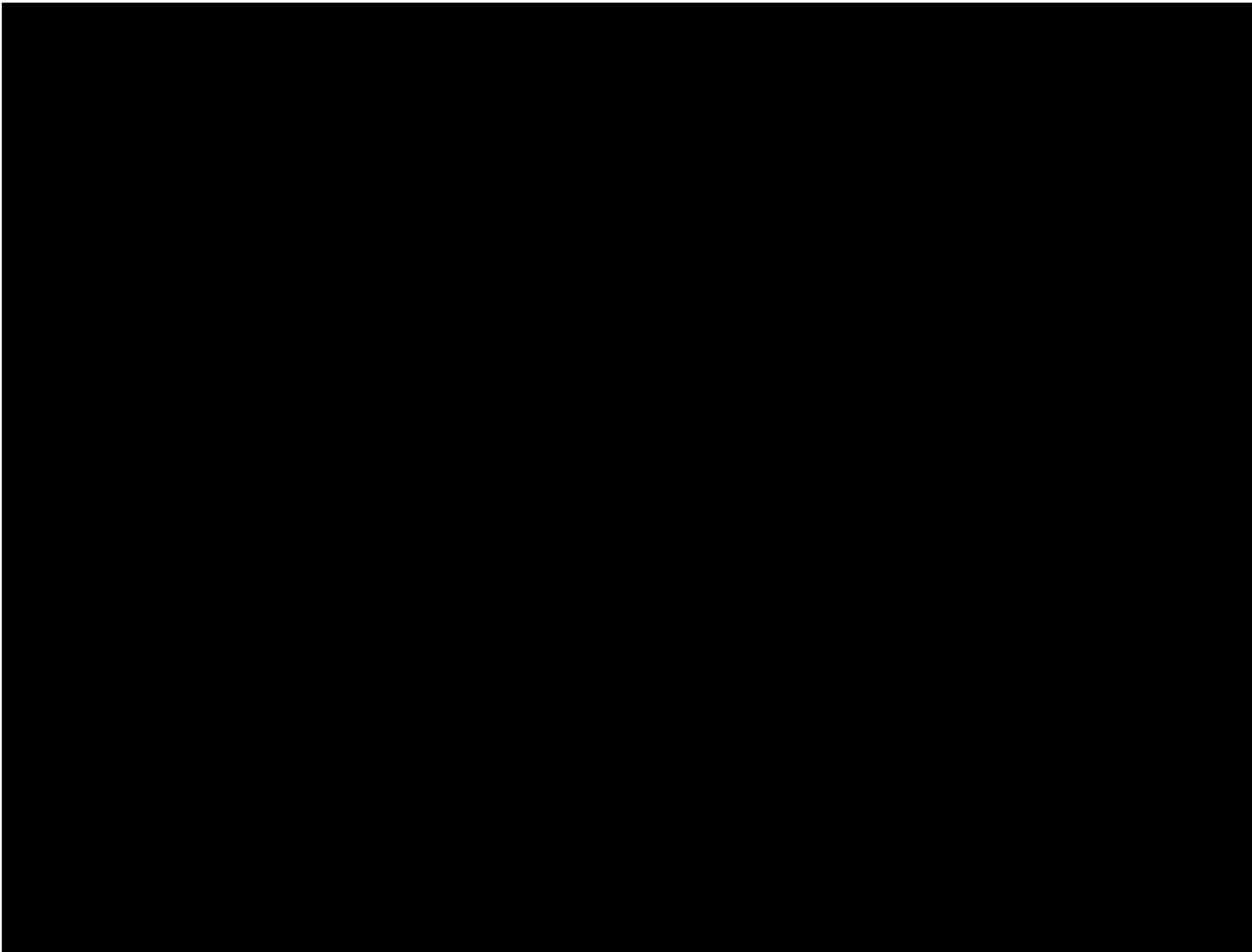
83. Furthermore, Exhibit 4 and Exhibit 5 below show that the heterogeneity in transaction prices persists *even when comparing the prices of new Subject Vehicles with similar MSRPs*. Specifically, I found that even for groups of vehicles whose MSRPs differ by no more than \$500, the difference between the highest and lowest transaction prices can be up to [REDACTED] for MY2014 Subject Vehicles and [REDACTED] for MY2015 Subject Vehicles.

⁸⁵ Stockton Deposition, 153:7–10 ("Q. And in -- instead of using the transaction prices, you used estimated average transaction prices calculated to a build-up methodology, correct? A. Yes.").

[REDACTED] for MY2015 Subject Vehicles.⁸⁶ Thus market data demonstrate yet again that there is no single “market price” for the Subject Vehicles, even for vehicles with comparable options packages. This specifically refutes Mr. Stockton’s assumption that there is a single transaction price for the Subject Vehicles. Moreover, Exhibit 4 and Exhibit 5 also show that a vehicle’s MSRP is a poor proxy for actual purchase prices paid in the market. This renders Mr. Stockton’s Overpayment Models, which calculate overpayment based on vehicle MSRPs, completely unreliable and speculative.

EXHIBIT 4

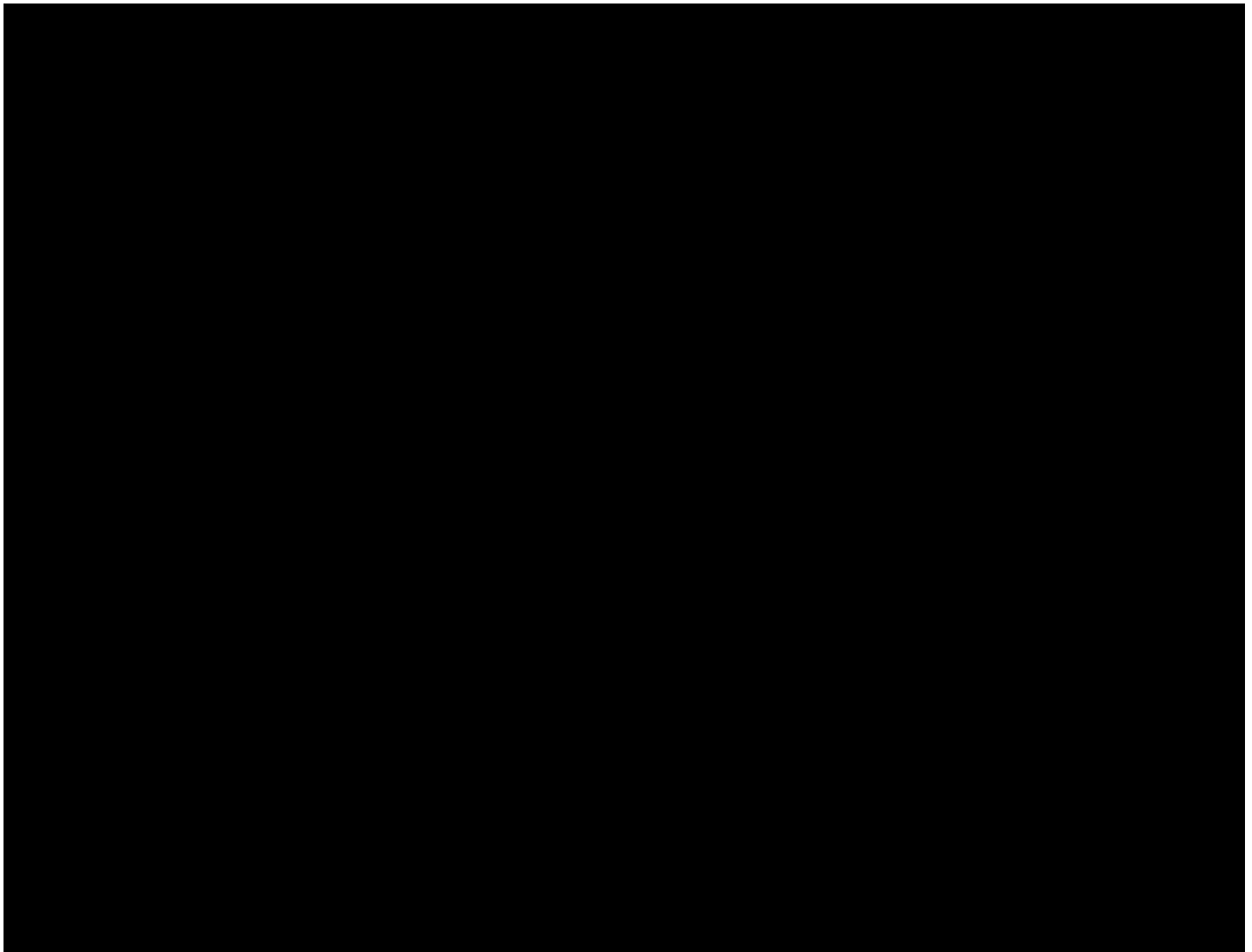
There is significant heterogeneity in the transaction prices of new MY2014 Subject Vehicles even when looking at Subject Vehicles with comparable MSRPs



⁸⁶ Transactions prices are inflation adjusted to 2019, Q2 dollars.

EXHIBIT 5

There is significant heterogeneity in the transaction prices of new MY2015 Subject Vehicles even when looking at Subject Vehicles with comparable MSRPs



84. The heterogeneity in transaction prices also refutes Mr. Stockton's assumption of uniform transaction price to MSRP ratios.⁸⁷ While Mr. Stockton assumed that the ratios are 92.3% and 95.8% for all MY2014 and MY2015 Subject Vehicles respectively,⁸⁸ Exhibit 6 and Exhibit 7 below show that there is substantial variation in this ratio in the actual marketplace. Specifically, this ratio ranges between [REDACTED] for the MY2014 Subject Vehicles, and between [REDACTED] or the MY2015 Subject Vehicles. A lower ratio of transaction price to MSRP than the one assumed by Mr. Stockton would lead to an overstatement of damages, while a higher ratio leads to an understatement. Therefore, even if one accepts Mr. Stockton's flawed methodology, a consumer whose transaction price to

⁸⁷ Stockton Report, ¶ 37.

⁸⁸ Stockton Report, ¶ 37.

MSRP ratio is [REDACTED] ill be greatly overcompensated and one for whom it is [REDACTED] will be undercompensated.

EXHIBIT 6

Actual Transaction Price to MSRP ratios for new MY2014 Subject Vehicles bear little resemblance to the ratio assumed by Mr. Stockton

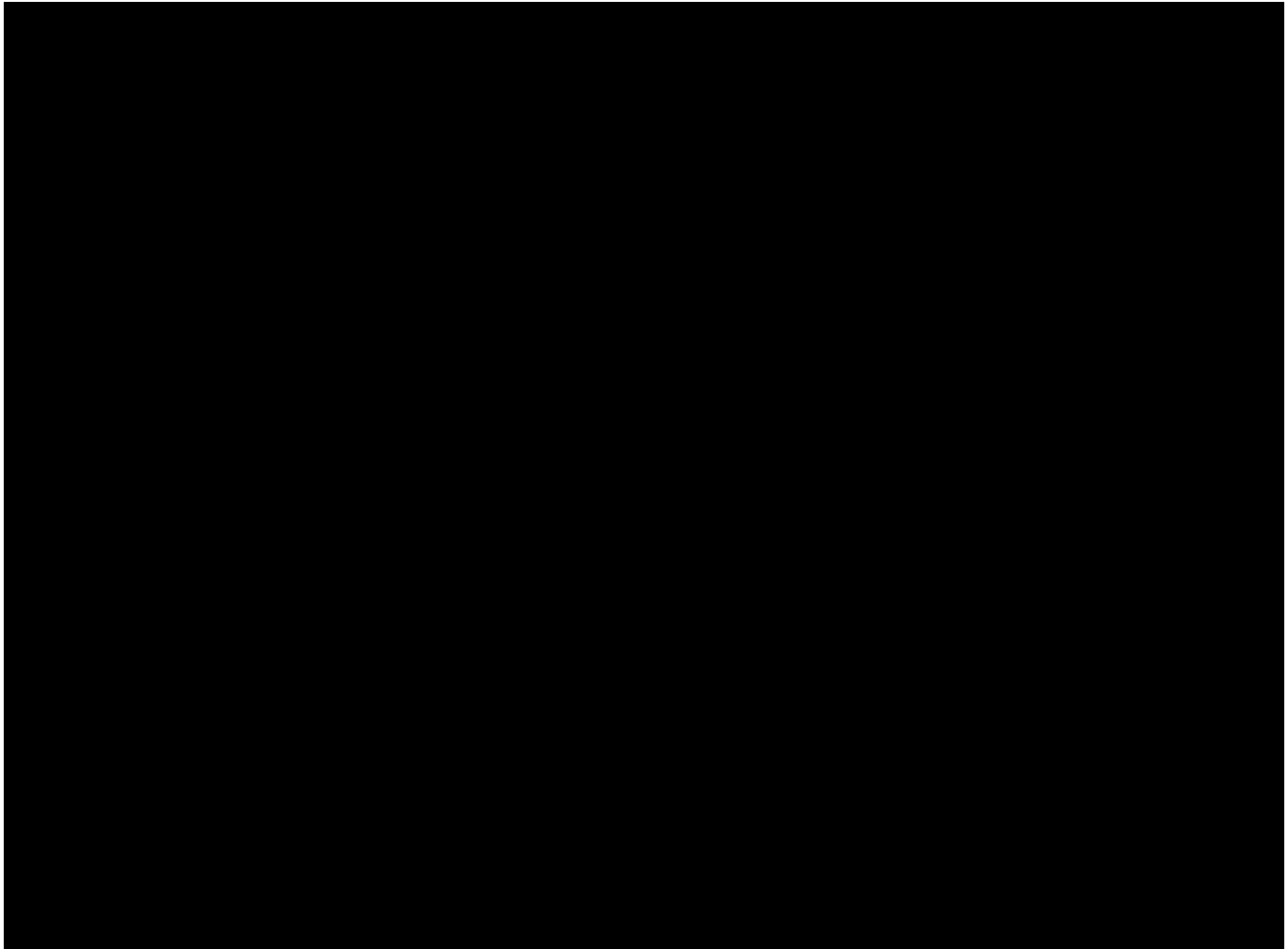
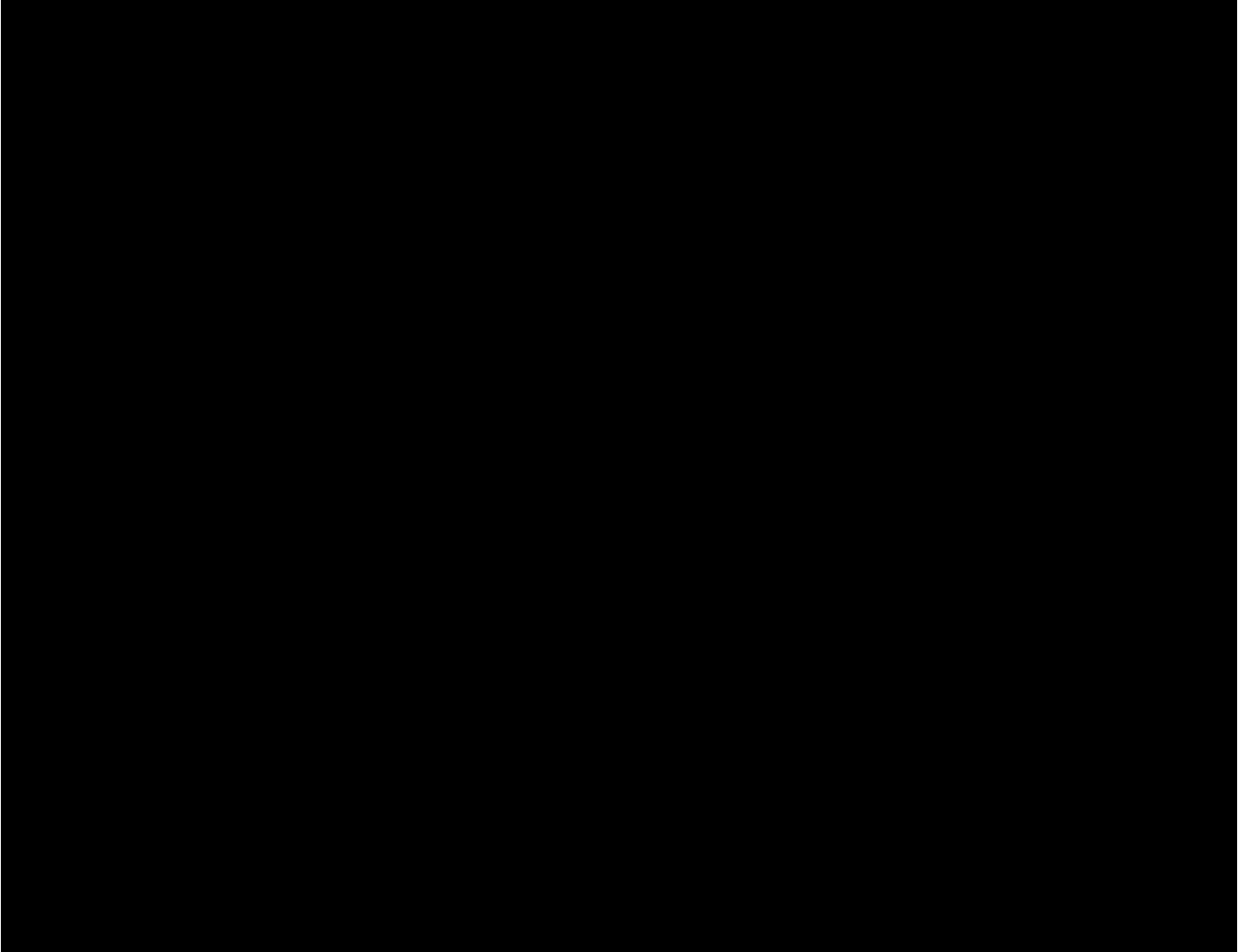


EXHIBIT 7

Actual Transaction Price to MSRP ratios for new MY2015 Subject Vehicles bear little resemblance to the ratio assumed by Mr. Stockton



85. In summary, actual market data refute Mr. Stockton's assumptions of uniform transaction prices and uniform overpayment. Indeed, even setting aside the numerous *additional* fundamental flaws that riddle Mr. Stockton's overpayment models (see discussion in §§ 7, 9, and 10), Mr. Stockton's assumptions of uniform transaction prices alone result in overpayment estimates that are refuted by actual market data.

86. In particular, if Mr. Stockton's Direct Price Premium model is applied to transactions in actual transaction data, the models *overcompensate* consumers in the vast majority of the cases. For example, the Direct Price Premium model *overcompensates* [REDACTED] of MY2014 and MY2015 transactions respectively, relative to the damages Mr. Stockton's

model would yield using consumer-specific transaction prices and MSRPs.⁸⁹ The findings are similar if his Regression Pricing model is applied to actual transaction data.⁹⁰

87. As discussed in the following subsections, academic literature and evidence from Named Plaintiffs show that numerous individual factors on the demand side and the supply side, which Mr. Stockton ignores, have a significant impact on the specific price of a given Subject Vehicle and undermine Mr. Stockton's assumption of a uniform overpayment.

8.1.1. Evidence from Named Plaintiffs and academic literature confirm that there are numerous individual factors on the demand side, ignored by Mr. Stockton, that have a significant effect on actual vehicle transaction prices and thus undermine Mr. Stockton's assumption of uniform overpayment

88. The Subject Vehicles are highly differentiated products. The MY2014 and MY2015 Subject Vehicles are highly configurable such that consumers could pick from a host of available options that let them customize the vehicles to their liking.⁹¹ For example, according to dealers' invoices, purchasers of the MY2014 Subject Vehicle could have chosen at least 22 different options, whose invoice prices ranged between \$13.20 (Front License Plate Bracket) and \$792 (Power Sunroof).⁹² Similarly, purchasers of the MY2015 Subject Vehicles could have chosen at least 24 different optional packages, whose invoice prices ranged between \$13.20 (Front License Plate Bracket) and \$1,183.60 (Sun and Sound

⁸⁹ See Workpaper 7. In order to calculate overcompensation, I begin with transaction prices and MSRPs from PIN data, and follow Mr. Stockton's methodology from that point onwards. The inflation adjustment to 2019 dollars is calculated based on the transaction date in PIN data. Since I observe transactions occurring in 2013 for MY2014 Subject Vehicles, I supplement Mr. Stockton's annual GDP implicit deflator series with a value for 2013 from the same source used by Mr. Stockton, the U.S. Bureau of Economic Analysis. See U.S. Bureau of Economic Analysis, "Gross domestic product (implicit price deflator) [A191RD3A086NBEA]," available at <https://fred.stlouisfed.org/series/A191RD3A086NBEA>, accessed on June 4, 2020.

⁹⁰ See Workpaper 8. To be clear, these calculations assume (as does Mr. Stockton) that for a given transaction, the same transaction price to MSRP ratio applies to the actual transaction (for the Subject Vehicle plus options if any) and the hypothetical transaction (for the comparator vehicle plus options if any). However, the transaction price to MSRP ratio will also likely vary between the actual and hypothetical transaction. Thus, even if Mr. Stockton were to account for actual prices paid by Proposed Class members in his Overpayment Models, he cannot determine the alleged premium they may have paid.

⁹¹ See MSN Autos, "2014 Chevrolet Cruze, Turbo Diesel Auto," available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2014/options/turbo-diesel-auto/sd-AAAbLsbb>, accessed on June 3, 2020; MSN Autos, "2015 Chevrolet Cruze, Turbo Diesel Auto," available at <https://www.msn.com/en-us/autos/chevrolet/cruze/2015/options/turbo-diesel-auto/sd-AAAbLSRk>, accessed on June 3, 2020; Chevrolet, "Cruze 2014," *Dealer eProcess*, available at <https://cdn.dealereprocess.org/cdn/brochures/chevrolet/ca/2014-cruze.pdf>, accessed on June 5, 2020, p. 12; Chevrolet, "2015 Cruze," *Dealer eProcess*, available at <https://cdn.dealereprocess.org/cdn/brochures/chevrolet/ca/2015-cruze.pdf>, accessed on June 5, 2020, p. 12.

⁹² See Workpaper 9.

Package).⁹³ According to dealers' invoices, the Subject Vehicles also came in ten colors,⁹⁴ which can affect their transaction prices.⁹⁵

89. Inevitably, the combination of options a consumer purchased, depending upon her preferences, affected the specific price at which she purchased the vehicle, thus introducing significant heterogeneity in the prices consumers paid for the Subject Vehicles. For example, all else equal, someone with a strong preference for a black car with the best audio package may be willing to pay a premium for a vehicle of that particular configuration. Similarly, dealers may be willing to discount inventory if particular colors or configurations are in oversupply or selling slowly.

90. The heterogeneity in the value consumers place on specific vehicle attributes can be seen,⁹⁶ for instance, in **Appendix 5**, which shows that the Named Plaintiffs purchased different combinations of options for their Subject Vehicles. Similarly, **Appendix 6a and Appendix 6b** show that there is significant heterogeneity in the dealers' invoice prices depending on the set of options purchased by a particular consumer. For example, the total dealer invoice price of the option sets purchased by customers of MY2014 Subject Vehicles in August 2013 varied between \$13.20 and \$4,805;⁹⁷ and the total dealer invoice price of the option sets purchased by customers of MY2015 Subject Vehicles in December 2014 varied between \$13.20 and \$3,529.⁹⁸ While the customer does not pay the dealers' invoice price, at the very least, the exhibits highlight the heterogeneity in consumers' preferences for vehicle options, which, in turn, affect market prices. Mr. Stockton chose to ignore the very existence of such options and their prices in both the actual and but-for worlds, even though consumers pay for not just for the base vehicle, but also any of the options that come with it.

91. In addition to options, a consumer's willingness to pay for a vehicle is also affected by her preferences for specific non-option-related vehicle attributes, and those preferences can vary

⁹³ See Workpaper 9.

⁹⁴ See Workpaper 9. This does not include the two additional choices for interior trim colors.

⁹⁵ For example, the dealer invoice prices of the colors for MY2014 Subject Vehicles range from \$0 (Tungsten Metallic) to \$286 (Crystal Red Metallic Tintcoat). See Workpaper 9.

⁹⁶ See Hal R. Varian, "Revealed Preference and its Applications," *The Economic Journal* 122, no. 560, 2012, pp. 332–338.

⁹⁷ The lower priced option set included the front license plate bracket. The higher priced option set included the enhanced safety package, LT driver convenience package, chrome body side molding, sport pedal kit, illuminated door sill plates, front fog lamp kit, the audio system with navigation, pioneer audio system premium, premium all weather mats, cargo mat, front rear splash guards, cargo net dealer, power sunroof, crystal red metallic tincoat, and heater oil pan. See Backup to **Appendix 6a**.

⁹⁸ The lower priced option set included the front license plate bracket. The higher priced option set included the black granite metallic color paint, the enhanced safety package, the diesel driver convenience package, the sun and sound package, chrome body side molding, a sport pedal kit, illuminated door sill plates, the audio system with navigation, premium all weather mats, a cargo mat, and sun and sound savings. See Backup to **Appendix 6b**.

significantly between consumers.⁹⁹ Indeed, Named Plaintiffs do not have *identical* preferences for specific diesel engine attributes of the Subject Vehicles, and in some cases, even have contradictory preferences. For instance, while Plaintiff Bassam Hirmiz considered fuel economy, as well as performance related attributes such as power and torque in his decision to purchase a Subject Vehicle,¹⁰⁰ Plaintiff Thomas Hayduk stated that fuel economy “was definitely a consideration” that came “part and parcel with a diesel engine,” but also noted that the increased power of diesel engines was not appealing “because [the Subject Vehicle] wasn’t really set up for towing anything.”¹⁰¹ This indicates that purchasers of even the same product can value component features differently, inconsistent with Mr. Stockton’s assumptions that the alleged defect would have exactly the same effect on the “benefit of the bargain” on all purchasers of Subject Vehicles in the same model year.

92. Similar to preferences for vehicle attributes, consumers’ search and negotiation behaviors affect actual prices paid and would affect prices paid in the but-for world. This has been well documented by the academic literature relating to the U.S. car industry. Fiona Scott Morton et al. (2011) find that transaction prices are affected by multiple differing factors, including customers’ information on dealer’s invoice prices, search costs/behavior, and willingness to bargain.¹⁰² The impact of information on price negotiation is also underscored by Florian Zettelmeyer et al. (2006), who find that consumers who make use of the internet as a search method pay lower prices.¹⁰³ Similarly, according to Meghan Busse et al. (2006), consumers are able to negotiate lower prices if provided with more information on promotional discounts.¹⁰⁴

93. Consistent with the academic literature, Named Plaintiffs showed different search behaviors prior to purchasing Subject Vehicles. For example, Plaintiff Thomas Hayduk relied on internet searches to gather information prior to his purchase of the Subject Vehicle,

⁹⁹ Attributes include reliability and expected resale value. See Stockton Report, ¶ 15.

¹⁰⁰ Hirmiz Deposition 103:16–20 (“Q. Why do you like diesels? A. They have power, they have torque, and just something about having a diesel is...Q. Fuel efficiency? A. Yes.”).

¹⁰¹ Hayduk Deposition, 121:9–14 (“Q. And fuel economy was an important issue as well, correct? A. It was definitely a consideration. I mean, I think that comes part and parcel with a diesel engine. That’s one of the benefits is the added miles per gallon.”); Hayduk Deposition, 60:5–15 (“Q. What is torque, did you know? A. Torque is the amount of power that actually goes to the wheels. Q. Do diesel vehicles have different torque than gasoline vehicles? A. They’re supposed to, yes. Q. Was that something that was appealing to you about a diesel? A. No, not really, because that car wasn’t really set up for towing anything. It was just a passenger car.”).

¹⁰² Fiona Scott Morton et al., “What matters in a price negotiation: Evidence from the U.S. auto retailing industry,” *Quantitative Marketing and Economics* 9, no. 4, 2011, pp. 365–402 at p. 400.

¹⁰³ Florian Zettelmeyer et al., “How the Internet Lowers Prices: Evidence from Matched Survey and Automobile Transaction Data,” *Journal of Marketing Research* 43, no. 2, 2006, pp. 168–181 at p. 179.

¹⁰⁴ Meghan Busse et al., “\$1,000 Cash Back: The Pass-Through of Auto Manufacturer Promotions,” *The American Economic Review* 96, no. 4, 2006, pp. 1253–1270 at pp. 1268–1269.

including accessing online reviews and joining an online forum for Cruze owners.¹⁰⁵ In contrast, Plaintiff Jason Counts primarily relied on the window sticker of the Subject Vehicle for information, and, during his deposition, could not recall reviewing any online sources prior to purchase.¹⁰⁶ Furthermore, while Plaintiff Oscar Zamora and Plaintiff John Miskelly only visited a single dealership, Plaintiff Jason Counts chose to visit multiple dealerships prior to his purchase decision.¹⁰⁷

94. Named Plaintiffs also differed in their desire or ability to obtain discounts when purchasing their Subject Vehicles. For instance, Plaintiff Jason Counts “negotiated the purchase price” of his Subject Vehicle, and received both a credit union members’ discount and a veterans’ discount.¹⁰⁸ Similarly, Plaintiff Donald Klein qualified for a GM employee discount.¹⁰⁹ By contrast, Plaintiff John Miskelly noted that he “didn’t try and negotiate [the price] down” during the purchase of his vehicle.¹¹⁰ This heterogeneity in skill and willingness to negotiate also caused individual variation in the purchase price, which Mr. Stockton failed to acknowledge.

95. Mr. Stockton’s Overpayment Models, which relied on aggregate data, ignore important individual-specific demand factors that determined the specific price that each member of the Proposed Class paid for a Subject Vehicle. These factors apply to both the actual and the but-for worlds. Therefore, Mr. Stockton’s approaches cannot reliably determine whether the but-for price for a particular Proposed Class member would be different from the actual price. This structural flaw in his Overpayment Models undermines Mr. Stockton’s

¹⁰⁵ Plaintiff Thomas Hayduk’s Responses and Objections to General Motors LLC’s Second Set of Interrogatories, August 27, 2018 (“Hayduk Second Interrogatories”), p. 5 (“I accessed mostly online reviews such as Car and Driver, Edmonds, and Motor Trend. I did all my research online. I also joined an on-line forum for Cruze owners to see what they were saying.”).

¹⁰⁶ Plaintiff Jason Counts’ Responses and Objections to General Motors LLC’s Second Set of Interrogatories, August 23, 2018 (“Counts’ Second Interrogatories”), p. 5 (“I reviewed the window sticker on the Diesel Cruze Vehicle at the dealership prior to purchase.”); Counts Deposition, 83:23–84:3 (“Q. You don’t recall visiting any websites prior to purchasing your Cruze? A. No, I do not. Q. You don’t remember visiting any online forums prior to purchasing your Cruze? A. No, I do not.”).

¹⁰⁷ Deposition of Oscar Zamora, May 12, 2019 (“Zamora Deposition”), 51:15–21 (“Q. Why did you select the Bunnin Chevrolet Cadillac dealership to purchase the Cruze?...Q. Did you go to any other dealerships? A. No.”); Deposition of John Miskelly, October 31, 2018 (“Miskelly Deposition”), 139:14–15 (“Q. Is Jerry’s the only dealership you went to? A. Yes.”); Counts Deposition, 80:10–13, 81:2–8 (“Q. Cook Chevrolet. So you first saw the gasoline powered Cruze at Cook Chevrolet. Do I have that right? A. That’s correct... Q. Do you remember the names of any other dealerships that you visited when you were shopping for a car in early 2014? A. I don’t remember where I test-drove the Honda Civic from, and then after that I went down to the Sundance Chevrolet and that’s where I test-drove the diesel.”).

¹⁰⁸ Counts Deposition, 98:2–13 (“Q. You negotiated the purchase price? A. Yes. Q. How aggressively would you say you negotiated the purchase price? A. Not very aggressively. Q. What do you mean? A. I didn’t really offer up an alternative price. I know there were some discounts taken for being a credit union member, being a veteran, but other than that, I typically don’t negotiate real hard.”).

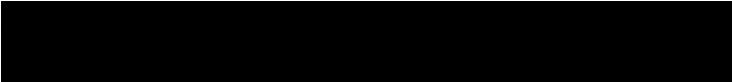
¹⁰⁹ Deposition of Donald Klein, October 2, 2018 (“Klein Deposition”), 74:25–75:3 (“Q. How was it that you qualified for the GM discount? A. Through my parents. Q. Your dad was working at the plants? A. Correct.”).

¹¹⁰ Miskelly Deposition, 158:7–9 (“Q. They said, “This is what we got, and this is the selling price of the vehicle?” A. I didn’t try and negotiate it down, no.”).

assumption of uniform overpayment, and thus renders Overpayment Models unreliable and speculative.

8.1.2. Academic literature and actual market data shows that there are individual factors on the supply side, ignored by Mr. Stockton, that have a significant effect on actual vehicle transaction prices

96. Economic literature also finds and confirms that the price at which dealers are willing to sell a vehicle is impacted by many dealer and transaction specific factors. For instance, research shows that the price at which dealers are willing to sell is affected by factors such as local competitive conditions, the dealer's marginal costs,¹¹¹ whether the purchaser is a first-time buyer,¹¹² the length of time a vehicle has been on the lot,¹¹³ inventory levels,¹¹⁴ and "resupply times."¹¹⁵

97. Indeed, actual transaction data show that there is substantial heterogeneity in the transaction price of new Subject Vehicles with similar MSRPs sold *at a given dealership within a year*. This can be seen in Exhibit 8 below, which presents the transaction prices of new MY2014 Subject Vehicles with similar MSRPs in 2014 at a single dealership in Chicago. The exhibit shows that even for groups of vehicles whose MSRPs differ by no more than \$500, the transaction prices of the MY2014 Subject Vehicles sold at the same dealership over a year period can differ by up to 

¹¹¹ Robert P. Rogers, "The Effect of State Entry Regulation on Retail Automobile Markets," Bureau of Economics Staff Report to the Federal Trade Commission, January 1986, available at <https://www.ftc.gov/sites/default/files/documents/reports/effect-state-entry-regulation-retail-automobile-markets/231955.pdf>, accessed on April 29, 2020, pp. 29, 46.

¹¹² Pinelopi Koujianou Goldberg, "Dealer Price Discrimination in New Car Purchases: Evidence from the Consumer Expenditure Survey," *Journal of Political Economy* 104, no. 3, 1996, pp. 622–654 at p. 626.

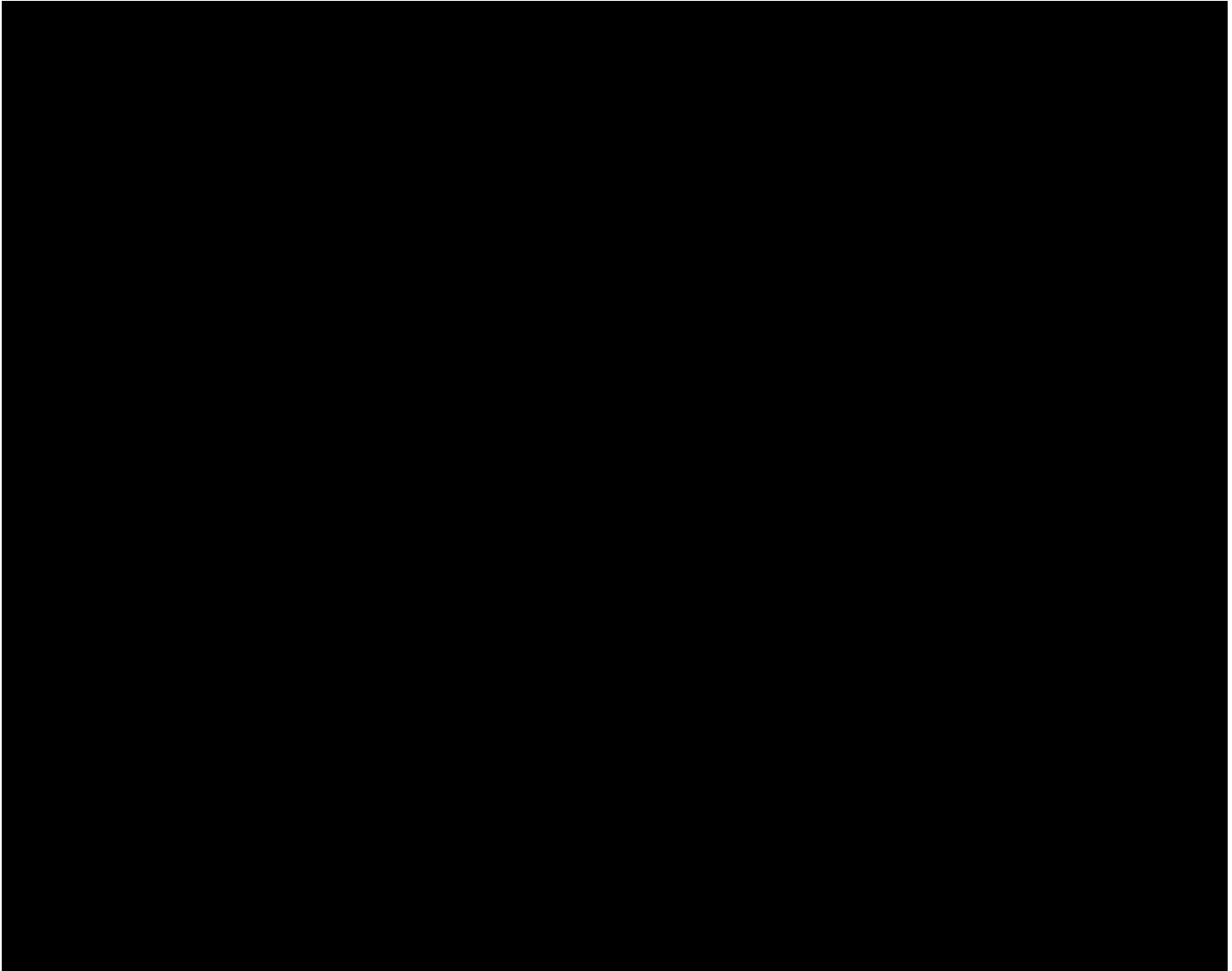
¹¹³ Yuxin Chen et al., "A Simultaneous Model of Consumer Brand Choice and Negotiated Price," *Management Science* 54, no. 3, 2008, pp. 538–549 at p. 545.

¹¹⁴ Florian Zettelmeyer et al., "Scarcity Rents in Car Retailing: Evidence from Inventory Fluctuations at Dealerships," NBER Working Paper No. 12177, 2006, available at <https://www.nber.org/papers/w12177.pdf> ("Scarcity Rents in Car Retailing"), p. 3; Victor M. Bennet, "Organization and Bargaining: Sales Process Choice at Auto Dealerships," *Management Science* 59, no. 9, 2013, pp. 2003–2018 at pp. 2004–5.

¹¹⁵ Scarcity Rents in Car Retailing, p. 3.

EXHIBIT 8

There is substantial heterogeneity in the transaction price of new MY2014 Subject Vehicles with similar MSRP's sold by the same single dealership in Chicago in 2014



98. Mr. Stockton's aggregate approach completely disregarded all such supply-side factors that influenced individual transaction prices. Therefore, he was not reliably able to assess market prices in the but-for world (see also § 9.2). This is in addition to the fact that he did not use market prices in the actual world as an input to his calculations. Instead, he used estimates based on dealer invoices and MSRPs, neither of which are typically the prices paid by consumers, nor do they reflect the variation in prices actually paid by consumers. This flaw undermines Mr. Stockton's assumption of uniform overpayment, and thus renders his Overpayment Models unreliable.

8.2. Mr. Stockton ignored academic literature, evidence from Named Plaintiffs themselves as well as actual market data, and instead erroneously assumed a uniform impact under his Retail Replacement Cost model

99. Using his Retail Replacement Cost model, Mr. Stockton estimated damages of \$3,489 and \$3,968 for MY2014 and MY2015 Subject Vehicles respectively. To compute these damages, he assumed a uniform difference between retail and trade-in value of \$2,475 and \$2,900 for the MY2014 and MY2015 Subject Vehicles respectively. In particular Mr. Stockton assumed a uniform retail price within each region, ranging from \$14,075 to \$14,175 for used MY2014 and from \$19,025 to \$19,125 for used MY2015 Subject Vehicles, across the various regions he analyzed. Similarly, he assumed uniform trade-in values within each region, ranging from \$11,600 to \$11,700 for MY2014 and from \$16,125 to \$16,225 for MY2015 Subject Vehicles, across the various regions he analyzed. He also assumed uniform Transaction Costs across all regions he analyzed.¹¹⁶ However, these assumptions have no basis.

100. In particular, the Retail Replacement Cost model assumes each Proposed Class member within a given region would have traded-in her Subject Vehicle for a uniform amount, and would have bought a replacement Subject Vehicle for a different uniform amount.¹¹⁷ This includes vehicles with high mileage and low mileage, vehicles with a clean record and those that have been in crashes, base vehicles and fully-loaded vehicles with every available option, and so forth.

101. However, these assumptions are refuted by academic literature, and evidence from the Named Plaintiffs in this case (discussed in § 8.1). In particular, in addition to the individual factors discussed in §§ 8.1.1–8.1.2 that introduce heterogeneity in the purchase price of a vehicle (e.g., consumer preferences, dealer's negotiating skill, and size of inventory), there are several *additional* transaction-level factors that cause heterogeneity in *trade-in* price. For instance, academic literature and third-party publications list factors that affect resale prices, such as the vehicle's mileage, vehicle condition, and demand and supply conditions in the used car market.¹¹⁸ In fact, when Mr. Stockton says that, "consumers trading in their

¹¹⁶ Stockton Report, Tab 9, pp. 1–3.

¹¹⁷ Stockton Report, Tab 9, p. 3.

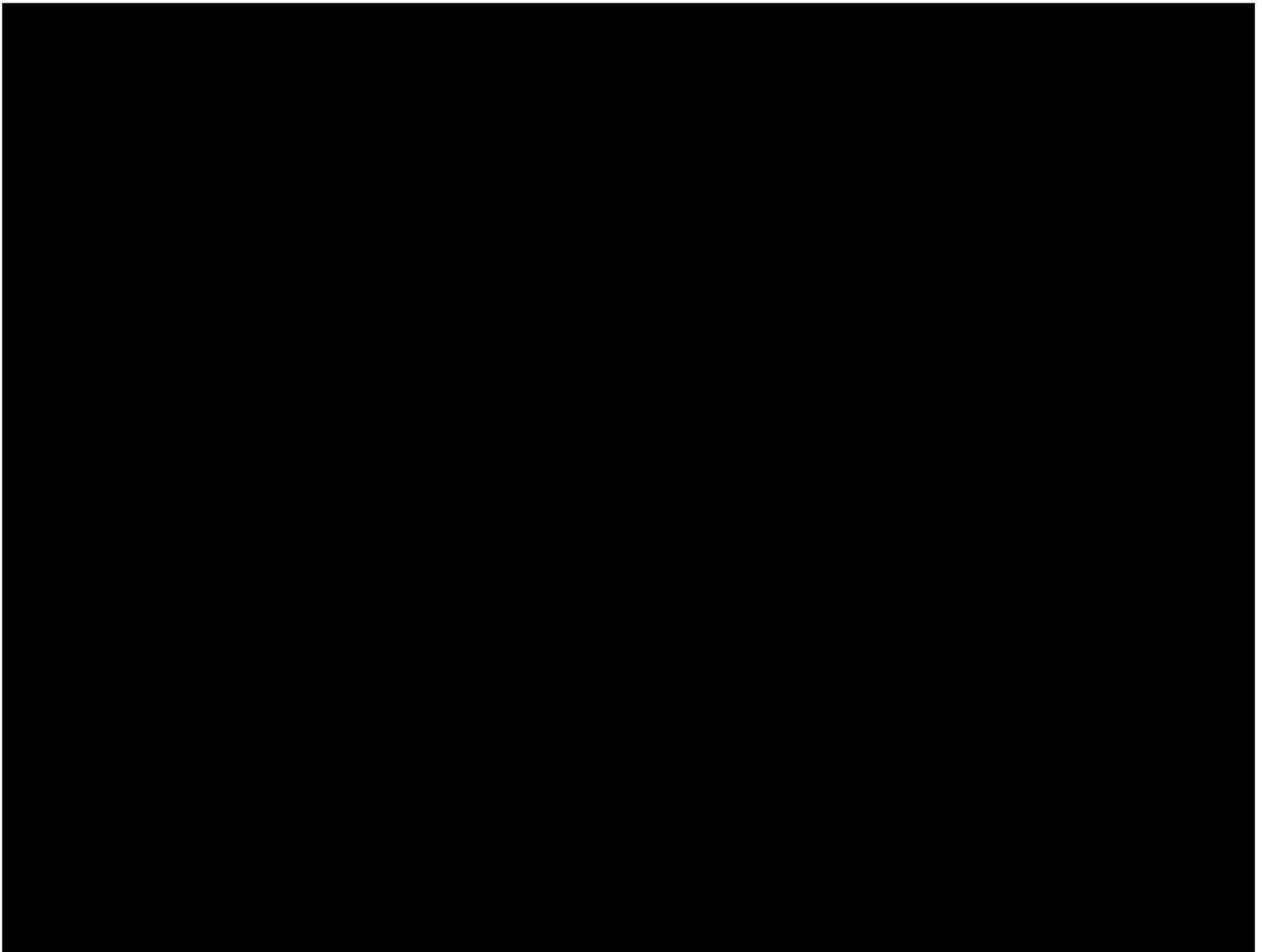
¹¹⁸ See, for example, Pasquale Schiraldi, "Automobile Replacement: A Dynamic Structural Approach," *RAND Journal of Economics* 42, no. 2, 2011, pp. 266–291. See also Kelley Blue Book, "Car Trade-in Tips: What is it and how can I maximize my car's value?," March 2, 2020, available at <https://www.kbb.com/articles/car-news/car-trade-in-tips-what-is-it-and-how-can-i-maximize-my-cars-value/>, accessed on April 29, 2020; Kelley Blue Book, "Frequently Asked Questions: Used Car," available at <https://www.kbb.com/company/faq/used-cars/>, accessed April 29, 2020.

vehicles are subject to their own discounting on the trade-in prices of their vehicles,”¹¹⁹ that “discounting” is affected by all the above demand and supply factors, which he has chosen to ignore in his analysis.

102. Indeed, as Exhibit 9 below shows, there is significant heterogeneity in the trade-in values for those MY2014 Subject Vehicles that have been traded-in for a used vehicle. I have not presented data for the MY2015 Subject Vehicle because of data limitations.¹²⁰

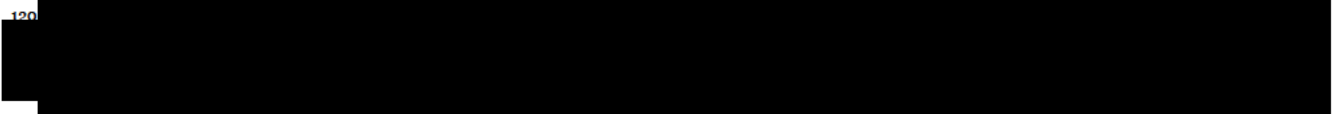
EXHIBIT 9

Mr. Stockton ignores that MY2014 Subject Vehicles’ trade-in prices are heterogeneous



¹¹⁹ Stockton Report, ¶ 48 (“In this case, it is not necessary to estimate transaction price discounts versus the published pricing levels, as, first, incentives and holdback do not apply for used vehicle purchases, and second, consumers trading in their vehicles are subject to their own discounting on the trade in prices of their vehicles.”).

¹²⁰



103. As seen in the above exhibit, a large heterogeneity persists even for MY2014 Subject Vehicles that have been traded-in within the same month, which is contrary to what Mr. Stockton assumed. This is yet another example of an assumption that Mr. Stockton made in his methodologies without any empirical basis and without considering the actual market evidence and data. For instance, I found that in April 2016, five MY2014 Subject Vehicles were traded-in with values ranging between [REDACTED]. In February 2018, thirteen MY2014 Subject Vehicles were traded-in at trade-in values ranging from [REDACTED].

104. Not only did Mr. Stockton disregard heterogeneity in retail and trade-in values, he also assumed away all heterogeneity in the Transaction Costs that individual members of the Proposed Class may incur.¹²² For instance, Mr. Stockton's damages depend on an assumed economic value for each Proposed Class member's time spent searching for a replacement vehicle, which necessarily depends on her salary. Mr. Stockton assumed that each Proposed Class member within a given state made an average amount of money per hour.¹²³ For example, he assumed that every single Proposed Class member in Michigan makes \$27 per hour and grosses \$1,078 per week,¹²⁴ which is clearly wrong. As Mr. Stockton recognized, "you could have somebody very low income, a college students [sic] buying one [Subject Vehicle], or a wealthy person particularly buying for somebody else."¹²⁵ While he claimed that, the incomes of the "college student" and "wealthy person" were part of "measuring the tails" and that "the concentration of the distribution in passenger cars tends to be fairly thick,"¹²⁶ it also means that his aggregate methodology (even if otherwise reliable, which it is not) is overcompensating those with income below average and undercompensating those with income above average. Crucially, Mr. Stockton presented no evidence regarding the income distribution of purchasers of the Subject Vehicles, including Named Plaintiffs.¹²⁷

¹²² [REDACTED]

¹²² As discussed in § 4.3, Transaction Costs include: sales taxes on the difference between the retail price and the trade-in value, and titling and documentary fees incurred when purchasing a vehicle, and Stockton's estimate of the monetary value of time spent searching for a new vehicle.

¹²³ Stockton Report, Tab 9, pp. 15–18.

¹²⁴ Stockton Report, Tab 9, p. 15.

¹²⁵ Stockton Deposition, 217:24–218:7 ("Q: What is the – what is the range of income of owners of compact cars? A. I'd have to see the data. But from the very lowest to the very highest, obviously you could have someone very low income, a college students [sic] buying one, or a wealthy person particularly buying for somebody else. That's measuring the tails. But the concentration of the distribution in passenger cars tends to be fairly thick.").

¹²⁶ Stockton Deposition, 217:24–218:7.

¹²⁷ Stockton Deposition, 218:8–10 ("Q. And what is the concentration? Where does it fall in the income? A. I don't know the numbers.").

Therefore, his aggregate methodology over or under compensates a significant share, if not the majority, of the Proposed Class members.

105. Similarly, Mr. Stockton assumed that each Proposed Class member within the entire country would have spent an average amount of time (15 hours) shopping for a vehicle to replace her Subject Vehicle.¹²⁸ This includes people who are internet-savvy and those who shop in person, busy parents and single students, those who shop at a single dealership and those who shop at many, and so forth. Again, Mr. Stockton chose to ignore all of these sources of individual level heterogeneity in order implement his aggregate damages model.

106. In summary, Mr. Stockton's Retail Replacement Cost model ignored all sources of variation in the trade-in and retail values that I have described above. Instead, Mr. Stockton simply calculated his economic damages for an average vehicle in good condition that was driven an average number of miles, to be replaced by the exact same vehicle by an average resident of a state who earns average wages, and who spends an average amount of time searching for the *same* replacement vehicle as every other member of the Proposed Class. Thus, he *assumed* that economic damages were uniform across members of the Proposed Class instead of establishing this fact through any analysis. These flaws undermine Mr. Stockton's assumption of uniform overpayment, and thus render his Retail Replacement Cost model inherently inaccurate, unreliable, and speculative.

¹²⁸ Stockton Report, Tab 9, pp. 15-16.

9. MR. STOCKTON'S OVERPAYMENT MODELS ARE ECONOMICALLY FLAWED IN ADDITIONAL WAYS

107. Apart from the significant structural flaws discussed above, Mr. Stockton's Overpayment Models suffer from several *additional* conceptual flaws that render his overpayment estimates unreliable and artificially inflated.¹²⁹ In particular, Mr. Stockton assumed a but-for world that is inconsistent with his Overpayment Models, and he failed to undertake the calculation required to assess any overpayment given the but-for world he assumed (§ 9.2). Moreover, Mr. Stockton's Regression Pricing model is structurally flawed, produces overpayment estimates that are unreliable, and even very simple corrections to his model show that there was no overpayment (§ 9.3).

9.1. Mr. Stockton's Overpayment Models rely on his fictional transaction price estimates that are not consistent with real world transaction data

108. As discussed in §§ 4–8, there are numerous reasons why Mr. Stockton's assumption of a single transaction price (for each Subject Vehicles' model year) is unreliable and inconsistent with real world circumstances and transaction data. Moreover, the unreliability of his Overpayment Models is further exacerbated by the fact that the single transaction price for a given Subject Vehicles' model year he used to calculate his overpayment is not even calculated from any real transaction price data, even though various sources of such data were available. For example, he chose not to rely upon data from Named Plaintiff transactions or the PIN data I use above. Instead, for each Subject Vehicle of a given model-year, Mr. Stockton used a composite, fictional transaction price, which he calculated using his "price build-up" methodology.¹³⁰ As described in § 4.1, this methodology involved using a series of estimates, averages, and assumptions that yielded an unreliable estimated average price.

109. For example, to obtain his estimate of the transaction price of the MY2014 Subject Vehicle, Mr. Stockton started with the vehicle's dealer invoice price of \$23,986 for the base vehicle. From that value, he subtracted his estimates of average dealer sales incentives of \$1,770 and average holdback percentage of 3%, to obtain an estimate of what he calls the "Net Dealer Price."¹³¹ However, while Mr. Stockton assumed that a uniform incentive

¹²⁹ I note as a threshold matter that Mr. Stockton's Overpayment Models are not based on any evidence in the record that GM specifically charged an identified "clean diesel premium," or an "emissions premium." Rather, Mr. Stockton calculates a hypothetical (structurally flawed) "diesel premium" by estimating the difference in his artificially constructed "transaction" prices of the Subject Vehicles and gasoline comparators he considers.

¹³⁰ Stockton Report, Tab 5, pp. 1–2; Stockton Report, Tab 8, p. 1.

¹³¹ Moreover, even his average is not reliable because average it includes assumptions he made for seven months (January 2014–July 2014) worth of incentives because he was missing data for those seven months. See Stockton Report, Tab 4, pp. 1–2; Stockton Report, Tab 5, p. 1.

amount of \$1,770 was applicable to every MY2014 Subject Vehicle,¹³² the assumption is refuted by data relied upon by Mr. Stockton. For example, his data show that, depending upon the Subject Vehicle's model-year, the largest available incentive ranges from \$500 to \$3,500.¹³³

110. To his "Net Dealer Price," he added a uniform average dealer profit of 7.3% for MY2014 Subject Vehicles and 7.1% for MY2015 Subject Vehicles, which are based on the average profit margin across *all* domestic light vehicles and dealerships. Thus, the margins he used were not averages of actual dealer margins for the Subject Vehicles. They were not even specific to Chevrolet or GM dealerships.¹³⁴ In reality, there are several circumstances where dealers will even sell a vehicle below cost i.e. with *negative* margin, which Mr. Stockton's methodology fails to take into account.¹³⁵

111. Moreover, Mr. Stockton's simplistic "built-up" transaction price does not account for the numerous other individual transaction-level demand and supply factors discussed §§ 8.1.1–8.1.2. It is therefore not surprising that, as described in § 8.1, Mr. Stockton's estimated transaction price for each Subject Vehicle is inconsistent with real world transaction data, thus rendering the results of his Overpayment Models unreliable.

9.2. Mr. Stockton assumed a but-for world that is inconsistent with his Overpayment Models, and he failed to undertake the calculation required to assess any economic damages given his but-for world

112. Mr. Stockton claimed to have calculated the difference in the market price of the Subject Vehicles between the actual world (where the alleged defect is not disclosed) and the but-for world (where it had been disclosed), supposedly taking into account the necessary demand and supply conditions in the market (which are "the forces that generate market prices").¹³⁶ However, Mr. Stockton did not do what he claimed to have done.

¹³² Stockton Report, Tab 5, p. 1.

¹³³ Stockton Report, Tab 4, pp. 1–2. Moreover, invoices produced by GM suggest that the incentive payments for Plaintiff John Miskelly's and Plaintiff Joshua Rodriguez's MY2014 Subject Vehicles were \$7,034 and \$3,691 respectively. See GMCOUNTS000102849–52 at 50–51; GMCOUNTS000103400–02 at 01.

¹³⁴ Stockton Report, ¶ 36; Stockton Report, Tab 5, p. 1.

¹³⁵ [REDACTED]

¹³⁶ Stockton Deposition, 23:19–24:10 ("Q. And does fair market value require information both about supply and demand? A. Not necessarily. Q. Have you measured the difference in the fair market value between plaintiffs' cars as warranted and those at the time of sale or lease? A. I believe I have measured the difference in market value between the plaintiff vehicles as delivered and the plaintiff vehicles as marketed at the time of sale. Q. And is it your testimony that that does not require consideration of both supply and demand? A. The question you asked me was more open --

113. As an initial matter, Mr. Stockton assumed that in the but-for world the Subject Vehicles would “not ... enter the stream of commerce.”¹³⁷ That is, he assumed that there would be *no market* for them in the but-for world. Nevertheless, he claimed that his overpayment estimates reflect “the difference in market value” of those vehicles.¹³⁸ Mr. Stockton seems to have disregarded the basic economic fact that for there to be a *market* price or value, it is necessary for a market to exist. It makes no sense to calculate a market price for a transaction that he postulated could not occur.

114. Even if one disregards this nonsensical position taken by Mr. Stockton, he did not do a calculation that would assess the economic injury (if any) in a scenario where the Subject Vehicles would not be sold in the but-for world. If the Subject Vehicles could not have been purchased in the but-for world, consumers would have switched to alternative vehicles. If so, calculating economic harm would require comparing the utility the consumers received in the actual world (the flow of benefits received from their Subject Vehicle less the purchase price) with the utility they would have obtained in the but-for world (the flow of benefits from the alternative vehicle they would have purchased in the but-for world, less its purchase price in the but-for world). In the likely scenario that consumers would have purchased an alternative vehicle (as opposed to making no purchase at all), that would require modeling demand and supply in the but-for world, which Mr. Stockton failed to do.

115. On the demand side, Mr. Stockton would have had to identify the potential alternative vehicles and consumers’ preferences for the various attributes of these vehicles, which he did not do.

116. On the supply side, Mr. Stockton would have had to determine the competitive environment that affects the alternative vehicles and the factors that determine dealers’ “willingness to sell.” While Mr. Stockton claimed that it was not necessary to model the supply side in this case,¹³⁹ that is simply not correct. By not modeling the supply side in the but-for world, he assumed that the competitive environment between manufacturers and

open-ended than that that gave way to certain situations that -- where it was not required. In this case it is necessary to consider to understand the forces that generate market price, and I've done that [emphasis added].”).

¹³⁷ Stockton Deposition, 74:5–14 (“Q. Is your assumption that consumers would not purchase diesel Cruze vehicles if the emissions control system did not function properly? A. My -- my assumption is based on two parts. One is the specific set of facts that I've been asked to assume, which is that the true characteristic of the vehicles would not qualify themselves for COCs. So if that had been disclosed prior to the point of purchase, they're not -- they're not going to enter the stream of commerce.”)

¹³⁸ Stockton Deposition, 23:19–24:3 (“Q. And does fair market value require information both about supply and demand? A. Not necessarily. Q. Have you measured the difference in the fair market value between plaintiffs' cars as warranted and those at the time of sale or lease? A. I believe I have measured the difference in market value between the plaintiff vehicles as delivered and the plaintiff vehicles as marketed at the time of sale.”).

¹³⁹ Stockton Deposition, 49:8–12 (“Q. Did you do a separate supply side analysis in this case? A. The circumstances as I understood of the case, based on that I 'didn't feel that I needed to so I -- I did not.”).

between dealers in the but-for world would be identical to that in the actual world, even though in Mr. Stockton's but-for world the Subject Vehicles have been *eliminated from the market*. There is no valid economic justification for such an assumption. In fact, by choosing to disregard the supply-side factors in the but-for world, Mr. Stockton has eschewed elementary economic theory, which tells us that market prices are determined by demand and supply-side factors.¹⁴⁰

117. Instead, Mr. Stockton's Overpayment Models disregarded the conduct of buyers and sellers in the but-for world:

- In his Direct Price Premium model, he simply *assumed* that the base MSRP of the *but-for* vehicle equaled the base MSRP of the Cruze Eco in the *actual world* plus the MSRP of certain options that are standard in the Diesel but not in the Cruze Eco. In doing so, Mr. Stockton assumed, without any evidence, that purchasers of the Subject Vehicles would effectively switch to the Cruze Eco in the but-for world. In fact, none of the Named Plaintiffs seem to have considered purchasing the Cruze Eco.¹⁴¹
- In his Regression Pricing model, he relied on a hedonic regression model (see § 4.2), which is widely recognized in the economic literature to be incapable of accurately accounting for all the relevant demand and supply processes that determine market prices, and suitable only for modeling the *average* relationship between attributes and prices *for a given set of supply and*

¹⁴⁰ N. Gregory Mankiw, "Supply and Demand Together," in *Principles of Microeconomics* (Boston, MA: Cengage Learning, 2007), pp. 76–82 at p. 77 ("At the equilibrium price, the quantity of the good that buyers are willing and able to buy exactly balances the quantity that sellers are willing and able to sell."); Walter Nicholson and Christopher Snyder, "Economics Models" in *Microeconomics Theory: Basic principles and Extensions* (Mason, OH: Cengage Learning, 2012), pp. 3–19, at p. 11 ("Marshall theorized that demand and supply interact to determine the equilibrium price (p^*) and the quantity (q^*) that will be traded in the market. He concluded that it is not possible to say that either demand or supply alone determines price or therefore that either costs or usefulness to buyers alone determines exchange value."); B. Douglas Bernheim and Michael D. Whinston, "Supply and Demand" in *Microeconomics* (New York, NY: McGraw-Hill Irwin, 2014), pp. 24–34 at p. 30 ("Once we know the demand and supply for a product, the next step is to determine the equilibrium price. That is the price at which the amount supplied and demanded are equal. The market 'clears' at the equilibrium price, with buyers and sellers making all their desired purchases and sales. Graphically, it's the price at which the supply and the demand curves intersect.").

¹⁴¹ Plaintiff Counts' Responses and Objections to General Motors LLC's First Set of Interrogatories, June 28, 2017, pp. 7–8; Plaintiff Hayduk's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 11, 2017, p. 7; Plaintiff Hemberger's Responses and Objections to General Motors LLC's First Set of Interrogatories, October 18, 2018, pp. 6–7; Plaintiff Bassam Hirmiz's Responses and Objections to General Motors LLC's First Set of Interrogatories, August 24, 2018, pp. 7–8; Plaintiff Klein's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 30, 2017, pp. 7–8; Plaintiff Derek Long's Responses and Objections to General Motors LLC's First Set of Interrogatories, May 17, 2019, p. 6; Miskelly First Set of Interrogatories, p. 7; Plaintiff Rodriguez's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 26, 2017, p. 7; Plaintiff Silveus' Responses and Objections to General Motors LLC's First Set of Interrogatories, June 30, 2017, p. 7; Plaintiff Zamora's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 20, 2017, p. 7.

demand conditions.¹⁴² In other words, Mr. Stockton's Regression Pricing model is structurally incapable of modeling either demand or supply conditions in the but-for world and therefore cannot be used to determine even equilibrium *list* prices (like MSRPs), let alone *transaction* prices, in the but-for world. Thus, the model cannot be used to estimate overpayments as Mr. Stockton intended.

118. In summary, Mr. Stockton's Overpayment Models are inconsistent with his assumed but-for world. Because they failed to account for the relevant demand and supply factors in the actual and but-for worlds, the overpayment estimates they predicted are unreliable and constitute pure speculation.

9.3. Mr. Stockton's Regression Pricing model is structurally flawed, produces overpayment estimates that are speculative and unreliable, and simple corrections to his model's errors establish that there was no overpayment

119. Apart from the fundamental flaws that are common to both the Overpayment Models proposed by Mr. Stockton, his Regression Pricing model suffers from several additional flaws that render his results unreliable and speculative. Specifically:

- The use of a hedonic regression method by Mr. Stockton directly contradicts his "bundle" theory.
- The hedonic regression method adopted by Mr. Stockton is subject to a number of flaws in implementation that yield substantially biased estimates of feature value. In particular, Mr. Stockton's Regression Pricing model suffers from omitted variable bias, which is reflected, in part, by the observation that the model's results are highly sensitive to the choice of explanatory variables.
- Even accepting Mr. Stockton's flawed model, the "overpayment" it predicts may be nothing but a payment for greater torque, which Proposed Class members already enjoyed in the actual world.

120. Correcting for even a few of these flaws results in no overpayment.

¹⁴² Sherwin Rosen, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," *Journal of Political Economy* 82, no. 1, 1974, pp. 34–55 at p. 54 ("[H]edonic price-characteristics functions typically identify neither demand or supply."); Ariel Pakes, "A Reconsideration of Hedonic Price Indexes with an Application to PC's," *American Economic Review* 93, no. 5, 2003, pp. 1578–1596 at p. 1581 ("hedonic regression is a 'reduced form,' i.e., its coefficients have no obvious interpretation in terms of economic primitives [demand or supply]."). See also Nestor M. Arguea and Chang Hsiao, "Econometric issues of estimating hedonic price functions: With an application to the U.S. market for automobiles," *Journal of Econometrics* 56, no. 1–2, 1993, pp. 243–267 at p. 265.

9.3.1. Mr. Stockton's use of a hedonic regression model directly contradicts his "bundle" theory because it assumes that bundled product features can be valued separately

121. Mr. Stockton's regression model was a poorly executed example of a "hedonic regression model,"¹⁴³ which is a statistical technique that, when implemented correctly, relates the prices of products to the attributes of these products. The use of hedonic regression directly contradicts Mr. Stockton's "bundle" theory because the methodology assumes that one *can* assign prices to individual features in differentiated products that are sold together. It is logically inconsistent to argue that the contribution of diesel attributes of the Subject Vehicles is inseparable (as Mr. Stockton did) and then to proceed with a hedonic model to estimate the value of certain features such as horsepower within a larger set of vehicle attributes (as Mr. Stockton did for the purposes of his Regression Pricing model).

122. Specifically, while Mr. Stockton claimed that individual attributes of a vehicle's engine (torque, horsepower, emissions, etc.) could not be un-bundled,¹⁴⁴ Mr. Stockton's hedonic regression unbundled them (albeit improperly) by including a diesel identifier variable and a horsepower variable as a *separate* explanatory variable.

9.3.2. Mr. Stockton's Regression Pricing model suffers from omitted variable bias, and its results are sensitive to the choice of explanatory variables

123. Like any regression model, a hedonic regression model will produce reliable and unbiased estimates of the marginal contribution of an attribute only if the model does not exclude important explanatory variables. As the economists Jan de Haan and Erwin Diewert explain:

"An important issue is the choice of the set of explanatory variables included in the hedonic equation. If some relevant variables—characteristics that can be expected to affect the price...—are excluded, then the estimated parameters of the included characteristics will suffer from omitted variables bias."¹⁴⁵

124. If, as in Mr. Stockton's model, important vehicle attributes are omitted, then the attributes that were included in Mr. Stockton's regression inadvertently capture the effect of the excluded attributes on a vehicle's price. This issue is important in the case of vehicles, which are complex products that include numerous attributes that contribute to their prices,

¹⁴³ Stockton Deposition, pp. 176:21–177:2 ("Q. And the results of these calculations is a – an inflation adjusted regression premium that reflects damages calculated by Model 2; is that correct? A. Yes. Q. And this particular regression is a hedonic regression model. Is that fair? A. Yes.").

¹⁴⁴ Stockton Report, ¶ 9.

¹⁴⁵ Jan de Haan and Erwin Diewert, "Hedonic Regression Methods," in *Handbook on Residential Property Price Indices* (Eurostat, 2013), pp. 49–64, available at <https://www.oecd-ilibrary.org/docserver/9789264197183-7-en.pdf?expires=1590757586&id=id&accname=guest&checksum=6DD4687BADFE11786809A64209CFDAD6>, p. 51.

such as the model, body type, transmission type (manual vs. automatic), drive type (rear-wheel, front-wheel, or all-wheel drive), trim level, maneuverability, cargo size, number of doors, comfort, interior quality, styling and prestige, and convenience or safety features. Indeed, as I discuss below, the overpayment estimated by Mr. Stockton's Regression Pricing model appears to be affected by the existence of such omitted variables from the regression, which when accounted for result in damages (i.e., Mr. Stockton's bundled diesel premium) that are either substantially less than Mr. Stockton's overpayment estimate or negative.¹⁴⁶

125. To illustrate the sensitivity of Mr. Stockton's hedonic models to variable choices, consider the vehicle attribute "curb weight," which I find is correlated with both MSRP and horsepower.¹⁴⁷ Indeed, when I include it as an explanatory variable in the regression, the variable is highly significant and the Regression Pricing model predicts overpayment (i.e., Mr. Stockton's bundled diesel premium) estimates that are *significantly* smaller.¹⁴⁸ Moreover, if I *replace* horsepower with curb weight, I find that curb weight continues to be highly significant and the resulting damages estimates are *negative* \$1,562 and *negative* \$1,717 for the MY2014 and MY2015 Subject Vehicles respectively, as seen in Exhibit 10 below.¹⁴⁹

¹⁴⁶ In general, omitted variable bias can either increase or decrease the estimated impact of an attribute on price relative to its true contribution. See Jan de Haan and Erwin Diewert, "Hedonic Regression Methods," in *Handbook on Residential Property Price Indices* (Eurostat, 2013), pp. 49–64, available at <https://www.oecd-ilibrary.org/docserver/9789264197183-7-en.pdf?expires=1590757586&id=id&accname=guest&checksum=6DD4687BADFE11786809A64209CFDAD6>, p. 51. However, in a hedonic regression context such as the one used by Mr. Stockton, this bias is likely positive. Therefore, the model would overstate the overpayment. In particular, an omitted variable can cause the remaining variables in the model to exhibit a positive bias if (a) the omitted variable is positively correlated with price, as any relevant feature would be, and (b) the omitted variable is positively correlated with a variable of interest. See Jeffrey M. Wooldridge, "Multiple Regression Analysis: Estimation," in *Introductory Econometrics: A Modern Approach* (Boston, MA: Cengage Learning, 2016), pp. 60–104 at pp. 78–80. The latter condition often holds in a hedonic regression of the type used by Mr. Stockton because "better" products often differ from "worse" products along multiple dimensions. For example, vehicles with higher quality wheels, a smoother ride, greater reliability, or additional convenience or safety features, may be valued more by the market than other vehicles. If any of these attributes are excluded from the model, attributes that are included may inappropriately incorporate the incremental price associated with the omitted attributes.

¹⁴⁷ For the handful of vehicles in Mr. Stockton's dataset for which Wards Auto did not contain curb weight data (16 out of 250), I collected the information from the MSN Auto website, available at <https://www.msn.com/en-us/autos/> ("MSN Auto"), accessed on May 31, 2020. I find that the unconditional correlations are: (i) 0.699 for curb weight and MSRP; and (ii) 0.335 for curb weight and horsepower. If I consider gasoline vehicles only, the correlation coefficients are: (i) 0.775 for MSRP and curb weight; (ii) 0.728 for horsepower and curb weight. See Workpaper 11. I note that the Subject Vehicles seem to weigh more partly because they have a heavier diesel engine, but also because they include additional components such as, "stronger transmission, bigger brakes, and extra equipment like the tank for Diesel Emission Fluid, or liquid urea," which will have an impact on their list prices. See John Voelcker, "2014 Chevrolet Cruze Diesel: First Drive," Green Car Reports, May 27, 2013, available at https://www.greencarreports.com/news/1084369_2014-chevrolet-cruze-diesel-first-drive, accessed on May 31, 2020.

¹⁴⁸ The model predicts overpayment of \$177 and \$94 for the MY2014 and MY2015 Subject Vehicles respectively. For the regression results, see **Appendix 7**.

¹⁴⁹ For the regression results, see **Appendix 7**.

126. This manner of instability, where the estimates from a hedonic regression vary widely with small changes in the model due to omitted variable bias, is well recognized in the economics literature as an indication that the regression is not reliable or robust.¹⁵⁰ Indeed, omitted variable bias may explain Mr. Stockton's counterintuitive "finding" that a vehicle's predicted reliability does not explain its MSRP.¹⁵¹ The failure to include sufficient vehicle attributes renders the model unsuitable for Mr. Stockton's purposes.

9.3.3. Even accepting Mr. Stockton's Regression Pricing model, the "overpayment" it predicted may be nothing more than a payment for greater torque, which Proposed Class members already enjoyed in the actual world

127. As Mr. Stockton acknowledged, "one of the things that consumers are paying for [when purchasing diesel vehicles] is higher torque relative to horsepower."¹⁵² However, he did not add a variable for torque. Instead, he stated that his model implicitly accounts for this feature because it controls for vehicle horsepower and fuel type.¹⁵³ If this were true, one should get similar results from a regression where the horsepower variable is replaced by a variable measuring vehicles' torque.

128. However, by using data on torque readily available from the same source Mr. Stockton relied upon (Wards Auto), I find that, once I replace horsepower with torque in his regression model,¹⁵⁴ the diesel variable that is the basis for Mr. Stockton's overpayment loses all of its explanatory power, while torque is highly statistically significant. As a result, the model predicts no damages whatsoever, and in fact predicts overpayment of *negative* \$6,622

¹⁵⁰ Charles R. Hulten, "Price Hedonics: A Critical Review," FRBNY Economic Policy Review, 2003, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=788904, p. 10.

¹⁵¹ Stockton Report, ¶ 42 ("Consumer Report's Predicted Reliability Rating is not a statistically significant contributor to the analysis."). If consumers value reliability, then one would expect that the attribute would have some power to explain MSRP. However, this is not what Mr. Stockton finds.

¹⁵² Stockton Deposition, p. 189:3–7. ("Q. Does the Model 2 regression control for torque? A. It -- it does because horsepower and torque are related. And when you're attempting to isolate the diesel premium, one of the things that consumers are paying for is higher torque relative to horsepower.")

¹⁵³ Stockton Deposition, p. 189:8–18 ("Q. And, again, you didn't separately take out fuel economy as a variable, correct, as a control variable, correct? A. I didn't separately look at it because it relates to horsepower. Q. And you 'didn't separately take out or look at torque, correct? A. Again, horsepower and torque are related and -- but 'it's going to be particularly related when a vehicle is a diesel or a hybrid. So by those identification variables, diesel and hybrid do -- do account for that.").

¹⁵⁴ When collecting data from Wards Auto, I noted few discrepancies with the data used by Mr. Stockton. First, MSRP values of four vehicles (MY2014 Nissan Sentra S, MY2014 Nissan Sentra S Plus, MY2014 Nissan Sentra SV, MY2014 Nissan Sentra SL) differed from the dataset used by Mr. Stockton. In these instances, I kept the values used by Mr. Stockton. Second, there were a handful of vehicles for which torque data was missing from the Wards Auto dataset: MY2014 Subaru XV Crosstrek (2.0i Premium, 2.0i Limited, Hybrid Premium, Hybrid Limited), MY2015 Subaru Crosstrek (2.0i, 2.0i Premium, 2.0i Limited, Hybrid Premium, Hybrid Limited). In these instances, I supplemented the missing information from MSN Auto.

and *negative* \$6,994 for the MY2014 and MY2015 Subject Vehicles respectively, as seen in Exhibit 10 below.

129. Furthermore, if I include curb weight *in addition* to torque, both variables remain highly significant, and the Regression Pricing model again predicts no damages whatsoever, and in fact predicts even greater *negative* damages of \$7,146 and *negative* \$7,539 for the MY2014 and MY2015 Subject Vehicles respectively, as seen in Exhibit 10 below.¹⁵⁵

130. Tellingly, Mr. Stockton testified, “I’m certain that I could show torque to be a statistically significant contributor to MSRP, but it correlates very closely with horsepower.”¹⁵⁶ However, there is more to that statement. If one controls for torque instead of horsepower, the Regression Pricing model predicts *negative damages*. Thus, according to Mr. Stockton’s flawed Regression Pricing methodology, Proposed Class members paid a premium, at least in part, for the greater torque the Subject Vehicles offered relative to their horsepower, but did not pay any Diesel MSRP premium with respect to the other aspects of the diesel “bundle” including any emissions characteristics of the Subject Vehicles. As discussed in § 7, consumers enjoyed the resulting benefits of greater torque in the actual world, and Mr. Stockton cannot just assume those benefits away—especially by deliberately declining to conduct the very analysis that disproves his conclusions.

131. In summary, the overpayment estimates predicted by Mr. Stockton’s Regression Pricing model are highly unreliable, speculative, and artificially inflated. As summarized in Exhibit 10 below, when I make minor changes to his regression specification, the model predicts either negligible or highly negative damages.

¹⁵⁵ This specification (Adjusted R-Squared of 0.724) also explains the variation in (the natural log of) MSRP better than Mr. Stockton’s specification (Adjusted R-Squared of 0.664). For the regression results, see **Appendix 7**.

¹⁵⁶ Stockton Deposition, p. 195:20–196:2. (“Q. Is it correct that you cannot conclude whether torque was a statistically significant factor in determining MSRP? ... A. I -- I have -- I’m certain that I could show torque to be a statistically significant contributor to MSRP, but it correlates very closely with horsepower. The two are very closely related.”).

EXHIBIT 10

Mr. Stockton's Regression Pricing model suffers from omitted variable bias and it is highly sensitive to the choice of the explanatory variables

	Mr. Stockton's Base Regression	Sensitivity			
		(1)	(2)	(3)	(4)
		Curb Weight and Horsepower	Curb Weight Instead of Horsepower	Torque Instead of Horsepower	Curb Weight and Torque
MY2014 Damages	\$2,834	\$177	-\$1,562	-\$6,622	-\$7,146
MY2015 Damages	\$2,860	\$94	-\$1,717	-\$6,994	-\$7,539

Source: Stockon Production; Wards Auto data; MSN Auto Internet Site

Note: Mr. Stockton regressed (log of) MSRP on the model year, horsepower, make, fuel type (gasoline, diesel, or hybrid), and an indicator for a Chevrolet diesel vehicle. For the additional regressions, Mr. Stockton's data have been supplemented with Wards Auto data and data from MSN Auto (<https://www.msn.com/en-us/autos/>).

10. MR. STOCKTON'S RETAIL REPLACEMENT COST MODEL IS STRUCTURALLY FLAWED AND UNRELATED TO PLAINTIFFS' ALLEGATIONS

132. According to Mr. Stockton, his Retail Replacement Cost model “places consumers in a position equivalent to that which they would have been in had the terms of the original transaction been fulfilled, at least for the remainder of the vehicle’s life.”¹⁵⁷ The model purportedly calculated economic damages to be “the additional money that would be necessary for consumers to replace their current defective vehicles with comparable non-defective vehicles, as measured by the published Retail price of the Class Vehicles as of June 2016.”¹⁵⁸

133. Fundamentally, Mr. Stockton’s Retail Replacement Cost model does not make any economic sense. This model seeks to award purchasers of Subject Vehicles an amount equivalent to round trip transactions costs of trading in their existing Subject Vehicle to a dealer as a “clean trade” and effectively purchasing *the same Subject Vehicle* as a used car from a dealer at a particular point in time (June 2016.)¹⁵⁹ This approach would award damages for any used car transaction, with or without a defect, because it effectively assumes that the difference between a vehicle’s retail and trade-in price can be used as a measure of economic damages due to the alleged presence of a “defeat device,” which is nonsensical.

134. The Retail Replacement Cost model has two major flaws in addition to those discussed in § 8.2: (i) it is not tied to the Plaintiffs’ specific allegations in this matter (§ 10.1); and (ii) it will award damages to those, including Named Plaintiffs, who sold their vehicles prior to June 2016 for reasons *unrelated to the Plaintiffs’ allegations* and compensate consumers for costs they would have incurred regardless of the alleged defect. Moreover, it will award compensation for transactions that may never occur at all (§ 10.2).

10.1. The Retail Replacement Cost model is unrelated to Plaintiffs’ allegations and would predict positive economic damages for any used car transaction

135. Applying Mr. Stockton’s Retail Replacement Cost method to any vehicle, with or without a defect, would yield positive damages. Moreover, the magnitude of the damages estimated with this method is independent of the defect type (and independent of whether there is a defect at all) and irrespective of whether a repair for it exists. The reason for this result is that Mr. Stockton assumed, without any basis, that the difference between a

¹⁵⁷ Stockton Report, ¶ 12.

¹⁵⁸ Stockton Report, ¶ 12.

¹⁵⁹ Stockton Report, ¶¶ 47–48; Stockton Report, Tab 9, pp. 1–2.

vehicle's retail and trade-in price can be used as a measure of economic damages due to the alleged presence of a "defeat device." However, such a difference exists in the market in every used-car transaction, regardless of the presence or importance of any defect or misrepresentation. Contrary to Mr. Stockton's assertions, this difference reflects the dealer's margins for the services the dealer provides, as a market-maker for used vehicles.¹⁶⁰ Of course, the margins themselves will depend upon the numerous transaction-level demand and supply factors discussed in § 8, which would cause this figure to vary.

136. Dealers provide important services to people who dispose of their vehicles, such as reducing the time and effort they would need to spend selling the vehicle directly or reducing uncertainty and the hassle related to money transfers.¹⁶¹ Dealers also provide important services to people who buy used vehicles, such as offering large inventories for consumers at a single place or providing warranties for used vehicles. Additionally, dealers incur direct costs in preparing vehicles for resale, such as cosmetic reconditioning, mechanical repairs, performing any deferred regular maintenance (such as an oil change), or replacing certain life-limited parts (such as tires or windshield wipers).¹⁶² Mr. Stockton ignored these services, and instead assumed that the Proposed Class members should be compensated for the markup between retail and trade-in prices, which will almost always exist in the market (unless a dealer suffers a loss on a trade-in) *irrespective of the presence of any defect*.

137. Indeed, that Mr. Stockton's method was not tied to Plaintiffs' allegations is clear from the fact that even if one ignores compensation for "Transaction Costs,"¹⁶³ it will predict damages of \$3,668 for owners of the MY2017 Cruze LS Sedan—a vehicle that is not subject to the alleged misconduct.¹⁶⁴ A method that provides reliable estimates of economic damages

¹⁶⁰ James Riswick, "Should you trade in your car? How to determine the right trade-in price for your car," Autoblog, December 8, 2018, available at <https://www.autoblog.com/2018/12/08/trade-in-vs-private-party/>, accessed on May 20, 2020.

¹⁶¹ Jeff Youngs, "Should I Trade my Old Car In or Sell it Privately," J.D. Power, February 24, 2012, available at <https://www.jdpower.com/cars/shopping-guides/should-i-trade-my-old-car-or-sell-it-privately>, accessed on May 20, 2020.

¹⁶² Ben Putano, "Best Practices for Reconditioning Used Cars," DealerCue, November 14, 2018, available at <https://blog.dealercue.com/reconditioning-used-cars>, accessed on May 20, 2020; Valentin Gui, "Why Dealership Used Cars Cost More," Instamotor, available at <https://instamotor.com/buy-used-car/used-car-dealer/why-dealership-used-cars-cost-more>, accessed on May 20, 2020; Jeff Youngs, "Should I Trade my Old Car In or Sell it Privately," J.D. Power, February 24, 2012, available at <https://www.jdpower.com/cars/shopping-guides/should-i-trade-my-old-car-or-sell-it-privately>, accessed on May 20, 2020.

¹⁶³ As discussed in § 4.3, Transaction Costs include: sales taxes on the difference between the retail price and the trade-in value, and titling and documentary fees incurred when purchasing a vehicle, and Mr. Stockton's estimate of the monetary value of time spent searching for a new vehicle.

¹⁶⁴ As of May 20, 2020, Kelley Blue Book lists the fair retail price for a used MY2017 Chevrolet Cruze LS Sedan as equal to \$10,371 in New York. For trade-ins, it lists a value of \$6,703 in New York. See Kelley Blue Book, "Used 2017 Chevrolet Cruze LS Sedan 4D," available at <https://www.kbb.com/chevrolet/cruze/2017/ls-sedan-4d/?vehicleid=420298&intent=buy-used&category=sedan&mileage=45592&pricetype=retail&condition=good>,

related to the allegations in this case should demonstrate a causal link between the challenged conduct and prices. Therefore, it should result in no damages for non-Subject Vehicles. However, Mr. Stockton's Retail Replacement Cost model fails that requirement, and therefore, the model is not tied to the allegations in this case and does not provide any informative estimate of economic damages.

10.2. The Retail Replacement Cost model assumed that every owner of a Subject Vehicle would have traded-in her vehicle in the but-for world, and it would compensate consumers for transaction costs that they would have incurred independent of the alleged misconduct or never will incur at all

138. Since the Retail Replacement Cost model purported to compensate consumers for Transaction Costs, it assumed that every owner of a Subject Vehicle would have traded-in her vehicle in the but-for world. This condition may not apply to many consumers at all. Furthermore, to the extent consumers would have traded in their vehicle before becoming "aware" of the alleged defect (e.g., in "June 2016"¹⁶⁵ as assumed in Mr. Stockton's calculations), Mr. Stockton's model would compensate those consumers for transactions costs they chose to incur for reasons *other* than the alleged defect. Since those consumers would have incurred the same costs in both the real and the but-for worlds, it is not appropriate to assign them economic damages in this model. In other words, they would have incurred the Transaction Costs associated with replacement of the Subject Vehicles *independently of the alleged misconduct*.

139. Furthermore, all Named Plaintiffs, except Plaintiff Thomas Hayduk and Plaintiff Oscar Zamora,¹⁶⁶ still own their Subject Vehicles despite being aware of the alleged defect and alleged misconduct.¹⁶⁷ In fact, Plaintiff Jason Counts testified that he has never attempted to sell his Subject Vehicle and intends to drive it "until it's scrapped."¹⁶⁸ Similarly, Plaintiff Jason Silveus also testified that he has never attempted to sell his Subject Vehicle and that

accessed on May 20, 2020; Kelley Blue Book, "2017 Chevrolet Cruze LS Sedan 4D," available at <https://www.kbb.com/chevrolet/cruze/2017/ls-sedan-4d/?vehicleid=420298&intent=trade-in-sell&options=7419036%7ctru&category=sedan&mileage=45592&pricetype=trade-in&condition=good>, accessed on May 20, 2020.

¹⁶⁵ Or before any other date with reference to which Mr. Stockton chooses to calculate damages.

¹⁶⁶ Hayduk Deposition, 80:20–81:1 ("Q. And you had control over the 2014 Chevy Cruze Diesel since the time the lawsuit was first filed in June 2016 correct? A. Correct. Q. And recently you knowingly traded in that vehicle, correct? A. Correct.") [REDACTED]

¹⁶⁷ For exam [REDACTED] owns a Subject Vehicle. See Miskelly First Set of Interrogatories, p. 6.

¹⁶⁸ Counts Deposition, 114:16–22. ("Q: You have not tried to sell or trade in your Cruze, have you? A. No, I have not. Q. Do you have any plans to sell or trade it in any time soon? A. No, I do not. Q. Do you plan to drive the vehicle until it's scrapped or until your daughter takes it away from you? What's your plan? A: Yes, I plan on driving it until it's scrapped.").

he plans to use it “for its normal use, normal life.”¹⁶⁹ Thus, the Retail Replacement Cost model would compensate owners for Transaction Costs they have not yet incurred and possibly may never incur at all. This is likely to be true for many other Proposed Class members facing similar circumstances. Furthermore, even if they do incur those costs sometime in the future, the damages predicted based on prices in June 2016 will not be applicable, thus rendering Mr. Stockton’s damage estimate unreliable and speculative.

140. An appropriate calculation of damages should not include such Transaction Costs that are not tied to the allegations or may never be incurred. The incorrect inclusion of these costs has a large impact on the “damages” identified by Mr. Stockton. Subtracting the Transaction Costs component from Mr. Stockton’s damages estimate alone reduces the claimed damages by 24.8 percent and 22.5 percent for the MY2014 and MY2015 Subject Vehicles respectively.¹⁷⁰

141. In conclusion, Mr. Stockton’s methodologies, analyses and conclusions are structurally flawed, speculative and unreliable. They would compensate plaintiffs who were not economically harmed, and they do not apply to a large subset of Proposed Class members. Even if applicable, they are unreliable because they are based on assumptions that have no support in the factual record, academic literature, bear little resemblance to the real world, are contradicted by actual transaction data, and, in fact, by his own models.

¹⁶⁹ Silveus Deposition, October 24, 2018, 146:19–147:11. (“Q: Other than that time, did you or anyone else make any attempts to trade in or sell the vehicle? A No. No. Not the Cruze, no. Q. You never advertised in a newspaper or online? A No. Q. Never put a sign in the window saying the car is for sale? A No. Q. Your current plan, as you testified earlier, is to use the vehicle for its normal use, normal life? A Yeah, and, you know, that’s my current plan. I haven’t felt the sting of the repair costs that have been incurred thus far on just maintaining the vehicle beyond what normal maintenance would be. When I do feel that sting, I wouldn’t be surprised if I totally did a 180. So I guess let me say it depends on how expensive it is to maintain the car beyond 75,000 miles.”).

¹⁷⁰ For the MY2014 Subject Vehicle, Mr. Stockton estimated Transaction Costs to be \$865 and damages to be \$3,489. Thus, the reduction in damages is $\left(\frac{\$865}{\$3,489}\right) \times 100 = 24.8\%$. The corresponding calculation for the MY2015 Subject Vehicle is $\left(\frac{\$894}{\$3,968}\right) \times 100 = 22.5\%$. See Stockton Report, Tab 9, pp. 1–2.

11. MR. STOCKTON'S MODELS CANNOT RELIABLY PREDICT DAMAGES FOR ANY INDIVIDUAL PLAINTIFF, INCLUDING THE NAMED PLAINTIFFS

141. For the myriad reasons discussed in §§ 5–10 Mr. Stockton failed to establish the existence of economic injury or a reliable measure of any economic damages on a class-wide basis, let alone for individual members of the Proposed Class, including any Named Plaintiff. Indeed, Mr. Stockton's models not only ignore, but are contradicted by, the record facts regarding Named Plaintiffs and their Subject Vehicle purchases. As a result, none of Mr. Stockton's models offer an economically reliable measure of damages for any Named Plaintiff.

142. In his report, Mr. Stockton purports to calculate individual damages for each Named Plaintiff.¹⁷¹ However, rather than using available information specific to the Named Plaintiffs to determine whether and by how much they allegedly overpaid for their Subject Vehicles, he simply applied his three models (which as discussed above are based on a host of assumptions and averages), to each individual Named Plaintiff. This is why each Named Plaintiff's individual damages are *exactly the same* except for (i) the model year of the Subject Vehicle; and (ii) in his Retail Replacement Cost model, the State in which the vehicle was purchased.¹⁷² Mr. Stockton ignored *all* other available evidence about the Named Plaintiffs' transactions, including information relevant to the question of whether they were economically harmed at all, and if so, by how much (e.g., Named Plaintiffs' purchase price, MSRP, discounts or incentive received, feature preferences and search and negotiation processes).¹⁷³ Ignoring factual evidence in favor of averages, estimates and assumptions is not a reliable method for calculating economic damages. That is especially true here, where the assumptions Mr. Stockton used are contradicted in numerous ways for each of the individual Named Plaintiffs.

143. First, as discussed above, Mr. Stockton assumed the existence of uniform economic injury for all Named Plaintiffs. However, as discussed in § 7.1, the Named Plaintiffs valued the unique incremental benefits their Subject Vehicles provided them (e.g. more torque, greater fuel efficiency and greater longevity), relative to the gasoline comparators Mr. Stockton used in his Overpayment Models, and they received those benefits in the actual

¹⁷¹ Stockton Report, Tab 12, p. 2.

¹⁷² Stockton Report, Tab 12, p. 2.

¹⁷³ Stockton Deposition, 27:17–28:7. (“Q. Have you -- in forming your opinions in this case -- in forming your opinions, you have not reviewed any of the statements made by the named plaintiffs in this case, correct? A. The statements like the depositions? Q. Is it fair to say you have not reviewed any depositions of any plaintiffs in this case in forming your opinions? A. That is fair. Q. And you have not reviewed any other discovery responses of any of the named plaintiffs in this case? A. I don't believe I have. Q. Have you reviewed any documents produced by plaintiffs in this case? A. I don't believe I have. And if I did, they would be listed in my reliance documents”)

world. For instance, Plaintiffs Derek Long, Thomas Hayduk, Christopher Hemberger, and Bassam Hirmiz all valued the greater fuel economy of their Subject Vehicles. In addition, Bassam Hirmiz also considered their greater power and torque in his decision to purchase a Subject Vehicle.¹⁷⁴

144. Any premium the Named Plaintiffs paid for their Subject Vehicles reflects, at the very least, the incremental benefits they have either already received or continue to receive from their Subject Vehicles, relative to gasoline comparators. If the economic value they received from just those incremental benefits exceeded the claimed overpayment, they would not have been harmed.

145. Second, Mr. Stockton's Overpayment Models calculate damages only for new Subject Vehicles. Indeed, Mr. Stockton admitted at his deposition that any allocation between the first purchaser of each Subject Vehicle and subsequent owners was *not* accounted for by his Overpayment Models, and would need to await *some later stage* in the case.¹⁷⁵ Thus, Mr. Stockton's models cannot establish the existence of or amount of damages for used vehicle purchasers. However, Named Plaintiffs Thomas Hayduk and Christopher Hemberger only ever purchased used Subject Vehicles and Mr. Stockton nonetheless applied his Overpayment Models to them.¹⁷⁶

146. Third, Mr. Stockton's Overpayment Models calculate damages on the basis of a unique transaction price (for each model year).¹⁷⁷ However, the Named Plaintiffs did not pay the same price for the Subject Vehicles (plus any options they purchased along with it). For

¹⁷⁴ Plaintiff Long's Responses and Objections to General Motors LLC's First Set of Interrogatories, May 17, 2019, p. 7. Hayduk Deposition, 2018, 121:9–14 ("Q. And fuel economy was an important issue as well, correct? A. It was definitely a consideration. I mean, I think that comes part and parcel with a diesel engine. That's one of the benefits is the added miles per gallon."). Hemberger Deposition, 8:13–9:1 ("Q. Are there other things you liked about the diesel other than reliability? A. Gas mileage. Q. Power? A. There really wasn't that much power in that car. I mean, it was definitely more powerful than the gasoline engine version of it. Q. That's what I mean -- A. Yeah. Q. -- that if you have two vehicles of otherwise the same, kind of, size and weight and one's diesel and one's gas -- A. The diesel is going to have much more power."). Hirmiz Deposition, 103:16–20 ("Q. Why do you like diesels? A. They have power, they have torque, and just something about having a diesel is...Q. Fuel efficiency? A. Yes.").

¹⁷⁵ Stockton Deposition, 113: 1–16 ("Q. And so you haven't made that next determination of how it's to be allocated among potential class members? A. I -- I have not done an allocation as of yet. Q. Have you been asked to in this case? A. I haven't been asked to. I've been told that the class has not yet been certified. Q. Is it correct that under your model as it stands now that each and every member of the class purchasers of 2014 Chevy Cruze vehicles will get the same amount of damages regardless of whether they owned or leased the vehicle? A. I've -- again, I've calculated the -- the original overpayment amount and that is on a per vehicle basis across all new retail registrations. What eventually happens in court, I don't know.").

¹⁷⁶ Plaintiff Hayduk's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 11, 2017, p. 6; Plaintiff Hemberger's Responses and Objections to General Motors LLC's First Set of Interrogatories, October 18, 2018, p. 6.

¹⁷⁷ Stockton Report, Tab 5, pp. 1–2; Stockton Report, Tab 8, p. 1.

instance, when purchasing a MY2014 Subject Vehicle, John Miskelly paid \$21,045 while Joshua Rodriguez paid \$32,916.¹⁷⁸

147. Fourth, Mr. Stockton's Overpayment Models calculate damages on the basis of a single MSRP for each model year. However, the Named Plaintiffs did not purchase only the base Subject Vehicle, but also options packages, which implies the total MSRPs were not identical. For instance, for their MY2014 Subject Vehicles, Plaintiff Jason Silveus reported an MSRP of \$28,315, while Plaintiff Oscar Zamora reported an MSRP of \$25,660.¹⁷⁹

148. Fifth, Mr. Stockton's Overpayment Models assumed away all differences in how individual Named Plaintiffs negotiated prices or any discounts they obtained, which will affect the individual transaction prices they paid and therefore the alleged economic harm (if any) they may have suffered, as discussed in § 8.1.1. However, Named Plaintiffs undertook different negotiation behaviors, which likely affected the price they paid for their Subject Vehicle and therefore any alleged overpayment they may have made for their vehicles. For instance:

- Plaintiff Jason Counts "negotiated the purchase price" of his Subject Vehicle, and received both a credit union members' discount and a veterans' discount.¹⁸⁰
- Plaintiff Donald Klein qualified for a GM employee discount.¹⁸¹
- Plaintiff John Miskelly noted that he "didn't try and negotiate [the price] down" during the purchase of his vehicle.¹⁸²

149. Sixth, Mr. Stockton's Overpayment Models calculate damages by assuming away differences in Named Plaintiffs' search behaviors, which can in turn affect prices, as discussed in § 8.1.1. However, Named Plaintiffs engaged in different search behaviors for their vehicles. For instance:

¹⁷⁸ See Miskelly First Set of Interrogatories, p. 6. See Rodriguez First Set of Interrogatories, p. 6.

¹⁷⁹ Silveus First Set of Interrogatories, p. 6; Zamora First Set of Interrogatories, p. 6.

¹⁸⁰ Counts Deposition, 98:2–13 ("Q. You negotiated the purchase price? A. Yes. Q. How aggressively would you say you negotiated the purchase price? A. Not very aggressively. Q. What do you mean? A. I didn't really offer up an alternative price. I know there were some discounts taken for being a credit union member, being a veteran, but other than that, I typically don't negotiate real hard.").

¹⁸¹ Klein Deposition, 74:25–75:3 ("Q. How was it that you qualified for the GM discount? A. Through my parents. Q. Your dad was working at the plants? A. Correct.").

¹⁸² Miskelly Deposition, 158:7–9 ("Q. They said, "This is what we got, and this is the selling price of the vehicle?" A. I didn't try and negotiate it down, no.").

- Plaintiff Thomas Hayduk relied on internet searches to gather information prior to his purchase of the Subject Vehicle.¹⁸³
- Plaintiff Jason Counts primarily relied on the window sticker of the Subject Vehicle for information.¹⁸⁴
- Plaintiffs Oscar Zamora and Plaintiff John Miskelly each only visited a single dealership, while Plaintiff Jason Counts chose to visit multiple dealerships prior to his purchase decision.¹⁸⁵

150. Seventh, in his Direct Price Premium model, Mr. Stockton effectively assumed that Named Plaintiffs would have purchased the Cruze Eco, as discussed in § 9.2. However, none of the Named Plaintiffs even considered buying the Cruze Eco in the actual world.¹⁸⁶

151. Eighth, in addition to ignoring differences in the Named Plaintiffs' search and negotiation behavior, Mr. Stockton's Overpayment Models have also ignored factors such as differences in the information Named Plaintiffs had on dealer's invoice prices and promotional discounts, which according to academic literature affects vehicle purchase prices, and therefore any economic harm the Named Plaintiffs may have suffered (as discussed in § 8.1.1).¹⁸⁷

¹⁸³ Plaintiff Hayduk's Responses and Objections to General Motors LLC's Second Set of Interrogatories, August 27, 2018, p. 5 ("I accessed mostly online reviews such as Car and Driver, Edmonds, and Motor Trend. I did all my research online. I also joined an on-line forum for Cruze owners to see what they were saying.").

¹⁸⁴ Plaintiff Counts' Responses and Objections to General Motors LLC's Second Set of Interrogatories, August 23, 2018, p. 5 ("I reviewed the window sticker on the Diesel Cruze Vehicle at the dealership prior to purchase."); Counts Deposition, 83:23–84:3 ("Q. You don't recall visiting any websites prior to purchasing your Cruze? A. No, I do not. Q. You don't remember visiting any online forums prior to purchasing your Cruze? A. No, I do not.").

¹⁸⁵ Deposition of Oscar Zamora, May 12, 2019, 51:15–21 ("Q. Why did you select the Bunnin Chevrolet Cadillac dealership to purchase the Cruze?...Q. Did you go to any other dealerships? A. No."); Miskelly Deposition, 139:14–15 ("Q. Is Jerry's the only dealership you went to? A. Yes."); Counts Deposition, 80:10–13, 81:2–8 ("Q. Cook Chevrolet. So you first saw the gasoline powered Cruze at Cook Chevrolet. Do I have that right? A. That's correct... Q. Do you remember the names of any other dealerships that you visited when you were shopping for a car in early 2014? A. I don't remember where I test-drove the Honda Civic from, and then after that I went down to the Sundance Chevrolet and that's where I test-drove the diesel.").

¹⁸⁶ Plaintiff Counts' Responses and Objections to General Motors LLC's First Set of Interrogatories, June 28, 2017, pp. 7–8; Plaintiff Hayduk's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 11, 2017, p. 7; Plaintiff Hemberger's Responses and Objections to General Motors LLC's First Set of Interrogatories, October 18, 2018, pp. 6–7; Plaintiff Hirmiz's Responses and Objections to General Motors LLC's First Set of Interrogatories, August 24, 2018, pp. 7–8; Plaintiff Klein's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 30, 2017, pp. 7–8; Plaintiff Long's Responses and Objections to General Motors LLC's First Set of Interrogatories, May 17, 2019, p. 6; Plaintiff Miskelly's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 20, 2017, p. 7; Plaintiff Rodriguez's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 26, 2017, p. 7; Plaintiff Silveus' Responses and Objections to General Motors LLC's First Set of Interrogatories, June 30, 2017, p. 7; Plaintiff Zamora's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 20, 2017, p. 7.

¹⁸⁷ Fiona Scott Morton et al., "What matters in a price negotiation: Evidence from the U.S. auto retailing industry," *Quantitative Marketing and Economics* 9, 2011, pp. 365–402 at 400; Florian Zettelmeyer et al., "How the Internet Lowers Prices: Evidence from Matched Survey and Automobile Transaction Data," *Journal of Marketing Research*

152. Ninth, Mr. Stockton's Overpayment Models have also ignored many dealer and transaction specific factors, which affect the transaction prices and therefore any economic harm the Named Plaintiffs may have suffered, as discussed in § 8.1.2. For instance, research shows that the price at which dealers are willing to sell is affected by factors such as local competitive conditions, the dealer's marginal costs,¹⁸⁸ the dealer's sales tactics, the experience of the salesperson, whether the purchaser is a first-time buyer,¹⁸⁹ the length of time a vehicle has been on the lot,¹⁹⁰ inventory levels,¹⁹¹ and "resupply times."¹⁹²

153. Tenth, in estimating damages using his Retail Replacement Cost model, Mr. Stockton assumed that all Subject Vehicles would have been traded-in in June 2016.¹⁹³ However:

- Plaintiffs Thomas Hayduk and Oscar Zamora traded-in or returned their respective Subject Vehicles,¹⁹⁴ which means that the model cannot apply to them.
- Plaintiff Jason Counts testified that he "plan[ned] on driving [the Subject Vehicle] until it's scrapped."¹⁹⁵
- Similarly, Plaintiff Jason Silveus stated that his plan is to use his Subject Vehicle "for its normal use, normal life."¹⁹⁶

XLII, 2006, pp. 168–181 at 179. Meghan Busse et al., "\$1,000 Cash Back: The Pass-Through of Auto Manufacturer Promotions," *The American Economic Review* 96, Sept. 2006, pp. 1253–1270 at 1268–1269.

¹⁸⁸ Robert P. Rogers, "The Effect of State Entry Regulation on Retail Automobile Markets," *Bureau of Economics Staff Report to the Federal Trade Commission*, January 1986, pp. 29, 46, available at <https://www.ftc.gov/sites/default/files/documents/reports/effect-state-entry-regulation-retail-automobile-markets/231955.pdf>, accessed on April 29, 2020.

¹⁸⁹ Pinelopi Koujianou Goldberg, "Dealer Price Discrimination in New Car Purchases: Evidence from the Consumer Expenditure Survey," *Journal of Political Economy* 104, no. 3, 1996, pp. 622–654 at p. 626.

¹⁹⁰ Yuxin Chen et. al., "A Simultaneous Model of Consumer Brand Choice and Negotiated Price," *Management Science* 54, no. 3, 2008, pp. 538–549 at p. 545.

¹⁹¹ Florian Zettelmeyer et. al., "Scarcity Rents in Car Retailing: Evidence from Inventory Fluctuations at Dealerships," NBER Working Paper No. 12177, 2006 ("Scarcity Rents in Car Retailing"), p. 3; Victor Manuel Bennett, "Organization and Bargaining: Sales Process Choice at Auto Dealerships," *Management Science* 59, no. 9, 2013, pp. 2003–2018 at pp. 2004–5.

¹⁹² Scarcity Rents in Car Retailing, p. 3.

¹⁹³ Stockton Report, Tab 9, pp. 1–2.

¹⁹⁴ Hayduk Deposition, 80:20–81:1 ("Q. And you had control over the 2014 Chevy Cruze Diesel since the time the lawsuit was first filed in June 2016, correct? A. Correct. Q. And recently you knowingly traded in that vehicle, correct? A. Correct."); PLAINTIFFS004677–678.

¹⁹⁵ Deposition of Jason Counts, October 1, 2018, 114:13–22 ("Q. You have not tried to sell or trade in your Cruze, have you? A. No, I have not. Q. Do you have any plans to sell or trade it in any time soon? A. No, I do not. Q. Do you plan to drive the vehicle until it's scrapped or until your daughter takes it away from you? What's your plan? A. Yes, I plan on driving it until it's scrapped.").

¹⁹⁶ Deposition of Jason Silveus, October 24, 2018, 146:19–147:11 ("Q. Other than that time, did you or anyone else make any attempts to trade in or sell the vehicle? A. No. No. Not the Cruze, no. Q. You never advertised in a newspaper or online? A. No. Q. Never put a sign in the window saying the car is for sale? A. No. Q. Your current plan, as you testified earlier, is to use the vehicle for its normal use, normal life? A. Yeah, and, you know, that's my current plan. I haven't felt the sting of the repair costs that have been incurred thus far on just maintaining the vehicle beyond what normal maintenance would be. When I do feel that sting, I wouldn't be surprised if I totally did a 180. So I guess let me say it depends on how expensive it is to maintain the car beyond 75,000 miles.").

154. These statements imply they may never incur the uniform Transaction Costs estimated by Mr. Stockton.¹⁹⁷

155. Eleventh, in the Retail Replacement Cost model, Mr. Stockton assumed the same weekly wage for *every* Proposed Class member in a particular State. For example, the model assumed uniform weekly wages of \$1,078 for all Proposed Class members in Michigan,¹⁹⁸ including Plaintiff Jason Counts (a performance improvement consultant at DTE Energy) and Plaintiff Donald Klein (an employee at the Michigan Department of Transportation).¹⁹⁹ Similarly, Mr. Stockton assumed that Plaintiff John Miskelly had weekly earnings of \$1,228 even though Mr. Miskelly is retired.²⁰⁰

156. Finally, in the context of the Retail Replacement cost model, Mr. Stockton also ignored factors that affect resale prices of used vehicles, such as the vehicle's mileage, vehicle condition, and demand and supply conditions in the used car market.²⁰¹ In fact, when Mr. Stockton stated that, "consumers trading in their vehicles are subject to their own discounting on the trade-in prices of their vehicles,"²⁰² that "discounting" is affected by all the above demand and supply factors, which he chose to ignore in his analysis.

157. Thus, even if he attempted to partially correct his damages estimates using actual Named Plaintiffs specific transaction data, his aggregate models are still structurally incapable of producing reliable damages estimates because they do not account for all the relevant demand and supply factors.

158. In conclusion, by awarding uniform damages to each of the Named Plaintiffs, Mr. Stockton ignored the available record evidence. To a reasonable degree of economic certainty, I conclude that Mr. Stockton's opinion that each Named Plaintiff suffered

¹⁹⁷ Stockton Report, Tab 9, pp. 1–2.

¹⁹⁸ Stockton Report, Tab 9, pp. 15, 17.

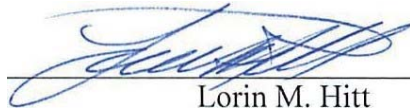
¹⁹⁹ Deposition of Jason Counts, October 1, 2018, 16:16–18, 24:21–23 ("Q. You purchased your Cruze at Sundance Chevrolet in Grand Ledge, Michigan? A. That's correct.... Q. What do you do for a living? A. I am a performance improvement consultant for DTE Energy."); Klein Deposition, 14:10–14, 23:11–18 ("Q. If it's ever unclear what vehicle I'm referring to, just let me know. You purchased your Cruze from Vic Canever Chevrolet in Fenton, Michigan, is that right? A. Correct.... Q. What do you do for a living? A. I work for the State of Michigan. Q. The Michigan Department of Transportation? A. Yes. Q. What are your job responsibilities? A. I'm responsible for the systems that house our data for construction of or maintenance of MDOT owned facilities.").

²⁰⁰ Miskelly Deposition, 41:8–13 ("Q. Retired in 2017? A. I did. Q. Are you retired now? A. Yes. Q. Full time? A. Yes."); Miskelly First Set of Interrogatories, p. 6; Stockton Report, Tab 9, p. 15.

²⁰¹ See, for example, Pasquale Schiraldi, "Automobile Replacement: A Dynamic Structural Approach," *RAND Journal of Economics* 42, no. 2, 2011, pp. 266–291. See also "Car Trade-in Tips: What is it and how can I maximize my car's value?," *Kelley Blue Book*, March 2, 2020, available at <https://www.kbb.com/articles/car-news/car-trade-in-tips-what-is-it-and-how-can-i-maximize-my-cars-value/>, accessed on April 29, 2020, and "Frequently Asked Questions: Used Car," *Kelley Blue Book*, available at <https://www.kbb.com/company/faq/used-cars/>, accessed April 29, 2020.

²⁰² Stockton Report, ¶ 48 ("In this case, it is not necessary to estimate transaction price discounts versus the published pricing levels, as, first, incentives and holdback do not apply for used vehicle purchases, and second, consumers trading in their vehicles are subject to their own discounting on the trade-in prices of their vehicles.").

economic harm and his calculations of their damages are unreliable and contradicted by the record. Thus, Mr. Stockton has not offered any reliable methodology for determining the existence of economic harm or for calculating the economic damages allegedly sustained by the Proposed Class in general, or for any individual putative class member or any of the Named Plaintiffs.



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Educational History

Massachusetts Institute of Technology	Ph.D. Management (1996) Concentration in Information Technology and Economics Dissertation Title: "Economic Analysis of Information Technology and Organization" Committee: Erik Brynjolfsson (MIT, chair), Zvi Griliches (Harvard), Thomas W. Malone (MIT)
Brown University	M.S. Electrical Engineering (1989)
Brown University	Sc.B. Electrical Engineering with Honors, Magna Cum Laude (1988)

Employment History

University of Pennsylvania, Wharton School, Philadelphia, PA. *Zhang Jindong Professor, Operations, Information and Decisions Department (formerly OPIM) (2015-present).*

University of Pennsylvania, Wharton School, Philadelphia, PA. *Dean's Chair Professor, Department of Operations and Information Management (2014-2015).*

University of Pennsylvania, Wharton School, Philadelphia, PA. *Professor of Operations and Information Management, Department of Operations and Information Management (2013-2014).*

University of Pennsylvania, Wharton School, Philadelphia, PA. *Class of 1942 Professor (Term Chair), Department of Operations and Information Management (2008-2013).*

University of Pennsylvania, Wharton School, Philadelphia, PA. *Alberto Vitale Term Associate Professor of Operations and Information Management (2002-2008).*

University of Pennsylvania, Wharton School, Philadelphia, PA. *Alberto Vitale Term Assistant Professor of Operations and Information Management (2000-2002).*

University of Pennsylvania, Wharton School, Philadelphia, PA. *Assistant Professor of Operations and Information Management (1996-2000).*

Massachusetts Institute of Technology, Industrial Performance Center, Cambridge, MA. *Graduate Fellow (1995-1996).*

Massachusetts Institute of Technology, Center for Coordination Science, Cambridge, MA.
Research Assistant (1992-1996).

Brown University, Department of Engineering, Providence, RI and IBM T.J. Watson Research Center, Yorktown Heights, NY. *Graduate Research Assistant (1988-89).*

Brown University, Department of Engineering, Providence, RI. *Research Assistant (1987-88).*

Oliver Wyman and Company, New York, NY. *Consultant (1989-1992).*

Harry Diamond Laboratories, Adelphi, MD. *Engineering Technician (1984-87).*

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47. Wu, Lynn, Jin, Fujie and Lorin M. Hitt (2015). "Data Skills and the Value of Social Media: Evidence from Large-Sample Firm Value Analysis," *Proceedings of the 34th Annual International Conference on Information Systems*. (Updated version: SSRN 2826115)
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52. Gu, Bin and Lorin M. Hitt (2001) "Transactions Costs and Market Efficiency," *22nd Annual International Conference on Information Systems*, New Orleans, LA.

Other Publications

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53. Chen, Pei-Yu and Lorin M. Hitt (2007). "Information Technology and Switching Costs," in T. Hendershott, ed., *Handbook of Information Systems Economics*.
54. Brynjolfsson, Erik and Lorin M. Hitt (2005) "Intangible but not Unmeasurable: Some Thoughts on the Measure and Magnitude of Intangible Assets," in Carol Corrado and Daniel Sichel, eds., *Measuring Capital in the New Economy*, University of Chicago Press (for NBER).
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71. Brynjolfsson, Erik, Hitt, Lorin M., Rock, Daniel and Prasanna Tambe (2019). "IT, AI and the Growth of Intangible Capital," Working Paper (SSRN 3416289).

Academic Honors

Management Science, Information Systems Best Paper Award Finalist (2014, 2015, winner 2016)
Information Systems Research: Best Paper Award (2013)
Wharton Excellence in Teaching Award, Undergraduate Division (1998, 1999, 2000, 2001, 2003, 2007, 2008, 2012, 2013, 2018, 2019)
Best Paper in Information Systems and Economics (last 7 years), Workshop on Information Systems and Economics (1999)
Runner-up for Best Paper, International Conference on Information Systems (1999, 2004, 2012)
David Hauck Award for Distinguished Teaching, Wharton School (1999)
Christian R. and Mary F. Lindback Award for Distinguished Teaching, University of Pennsylvania (1998)
National Science Foundation CAREER Program Grant Recipient (1998)
Best Paper Award, Management Information Systems Quarterly (1996)
International Conference on Information Systems Doctoral Consortium (1995)
MIT Industrial Performance Center Doctoral Dissertation Fellowship (1995)
"Best Paper" and "Best Paper Addressing the Conference Theme" Awards at the International Conference on Information Systems (1994)
DuWayne J. Petersen Fellowship (1992-1996)
Honorable Mention, National Science Foundation Fellowship (1989)
Elected to Tau Beta Pi Engineering Society (1988)
Elected to Sigma Xi Scientific Research Society (1988)
Finalist, National Merit Scholarship Program (1985)
National Society of Professional Engineers' Scholarship (1985)
Honorable Mention, Westinghouse Science Talent Search (1985)

Grants

Commonwealth Fund. The Business Case for Healthcare IT in Nursing Homes. (~\$150K) (1/08 – 12/13).

Co-Principal Investigator (with Mei Xue and Patrick Harker), National Science Foundation. Collaborative Research: Customer Efficiency and the Management of Multi-Channel Service Delivery Systems. Award: ~\$250K (8/05 – 8/07)

Wharton eBusiness Initiative/Mack Center, University of Pennsylvania, Wharton School. Product Reviews, Pricing and Market Strategy. Award: \$10K (5/05-11/05)

Fishman Davidson Center, University of Pennsylvania, Wharton School. Information Technology, Product Variety and Operations (6/2004-6/2005). Award: ~\$18K.

University Research Foundation. Information Technology and Product Variety; Data Development and Analysis. Award: \$18.5K (9/2004-5/2005)

Co-Principal Investigator (with Paul Kleindorfer and D.J. Wu), SAP America. Valuation of ERP in the Oil and Gas Industry. Award: \$40K (10/02-6/03)

Principal Investigator, NSF Grant IRI-9733877 (Computing and Social Systems Program): The Economics of Information Technology, Organization and Productivity: Theory Development and Empirical Investigation. Award: \$309K (6/98-10/04)

Principal Investigator. Customer Behavior in On-Line Markets. Wharton Electronic Commerce Forum. Award: \$25K (6/00 – 6/01).

Principal Investigator. Switching Cost and Pricing in Electronic Markets. Wharton eBusiness Initiative. Award \$25K (6/01-6/02)

Journal/Conference Reviews

Editorial Board

Information Systems Research (Guest Senior Editor, 2009-2011; Senior Editor, 2007-2008;

Associate Editor 2000-2002, 2004 Guest Associate Editor)

Journal of Management Information Systems (2002-present)

Management Science (2002-2008; Departmental Co-Editor – Information Systems, 2008-2015)

SSRN Information Systems and Economics (2004-2008)

Program Committee

Workshop on Information Systems and Economics (2009 Conference Co-Chair; 2004, Conference Co-Chair)

International Conference on Information Systems (2000, 2003 Associate Editor)

ACM Conference on Electronic Commerce (2007)

International Conference on Information Systems Doctoral Consortium (2007)

NYU CeDER Summer Doctoral Workshop (2007)

Ad-hoc Reviewer

American Economic Review, Canadian Journal of Economics, Canada Social Science Research and Humanities Council, City University of Hong Kong - Grant Review Committee,

Communications of the ACM, Economic Inquiry, European Economic Review, European Journal of Operations Research, Hawaii International Conference on System Sciences

Industrial Relations, Industrial and Labor Relations Review, Information Economics and Policy, Information Systems Frontiers, Information Systems Research, Information Technology and Management, Journal of Banking and Finance, Journal of Industrial Economics, Journal of Law,

Economics and Organization, Journal of Management Information Systems, Journal of Organizational Computing, Journal of Productivity Analysis, Management Science, Managerial and Decision Economics, Manufacturing & Service Operations Management, Marketing Science, McGraw-Hill Textbook Division, MIS Quarterly (occasional Guest Associate Editor), National Science Foundation, Review of Economics and Statistics, Regional Science, Sloan Management Review, Quarterly Journal of Economics

Teaching Experience

Massachusetts Institute of Technology, Sloan School of Management. Course: 15.567 – Introduction to eBusiness, Fall, 2001 (2 sections, co-taught with Erik Brynjolfsson)

University of Pennsylvania, The Wharton School. Course: OPIM101 – Introduction to Operations and Information Management. Fall, 2007; Fall, 2008; Fall, 2009; Fall, 2010; Fall, 2011 (Co-instructor); Fall, 2012; Fall, 2013 (x2); Fall, 2014 (x2) ; Fall, 2015 (x2) (Instructor).

University of Pennsylvania, The Wharton School. Course: OPIM105 -- Data Analysis in VBA and SQL. Spring, 2011 (Co-instructor); Spring, 2012; Spring, 2013; Fall, 2013; Fall 2015; Fall 2016 x2; Fall 2017 x2; Fall 2018 x2, Fall 2019 x2; Spring 2020.

University of Pennsylvania, The Wharton School. Course: OPIM 469 - Advanced Topics in Information Strategy and Economics. Spring, 2000 (x2); Spring, 2001 (x2); Spring, 2002 (x3) (Instructor); Spring, 2003 (Co-instructor, 2 sections); Spring, 2004; Spring, 2005; Spring, 2006; Spring, 2007; Fall, 2008; Spring, 2010; Spring, 2011; Spring, 2012; Spring, 2013, Fall 2014 (Instructor)

University of Pennsylvania, The Wharton School. OPIM669 - Advanced Topics in Information Strategy/Financial Information Systems. Spring, 1998; Spring, 1999; Spring, 2000; Spring, 2001; Spring, 2002 (Guest Lecturer); Spring, 2003 (Co-instructor); Spring, 2004; Spring, 2005; Spring, 2006; Spring, 2007 (Instructor).

University of Pennsylvania, The Wharton School. Tiger Team Field Application Project. Spring, 1999; Spring, 2000; Spring, 2001 (Faculty Advisor for Electronic Commerce/IT projects)

University of Pennsylvania, The Wharton School. Course: EMTM900 – Electronic Commerce Marketing. Spring, 2000 (Guest Lecturer)

University of Pennsylvania, The Wharton School. Course: D-SEM on Electronic Commerce. Fall, 2000

University of Pennsylvania, The Wharton School. Course: OPIM 319 - Advanced Topics in Information Strategy/Advanced Decision Support Systems (now OPIM469). Spring, 1998; Spring, 1999 (Instructor)

University of Pennsylvania, The Wharton School. Course: OPIM 210 - Management Information Systems. Fall, 1996; Spring, 1997; Fall, 1997; Spring, 1998; Spring 1999 (x2); Fall, 2002 (x2); Spring, 2004; Spring, 2006; Fall, 2006; Spring, 2007; Fall, 2007 (Instructor).

University of Pennsylvania, The Wharton School. MBA Pre-Term Exercise on Contract Negotiations for Information Technology Outsourcing. Fall, 1998; Fall, 1999 (with D. Croson and R. Croson)

University of Pennsylvania, The Wharton School. Course: OPIM 950/955/960/961 - Doctoral Seminar in Information Technology: Economics and Organization. Fall, 1997; Fall, 2000 w/ R. Aron as OPIM899; Fall, 2001 (Guest Lecturer); Fall, 2003 (Guest Lecturer); Spring, 2003; Fall, 2004 (Guest Lecturer); Spring, 2005; Spring, 2008; Spring, 2010; Spring, 2012; Spring 2013 (co-Instructor); Spring, 2015; Spring 2016; Spring 2017; Spring 2018; Spring 2019.

University of Pennsylvania, The Wharton School. Course: WH101 – Business and You. Spring, 2017, Fall 2017, Fall 2018, Fall 2019. (cotaught OIDD Session).

University of Pennsylvania, The Wharton School. Course: OPIM 666 - Information: Industry Structure and Competitive Strategy. Winter Quarter, 1997; Spring Quarter, 1997 (Instructor); Guest Lecturer (Fall Quarter, 1999; Fall Quarter, 2000).

Massachusetts Institute of Technology, Sloan School of Management. Course: 15.566 - Information Technology as an Integrating Force in Manufacturing. Spring, 1995 (Teaching Assistant)

Brown University, Department of Engineering. Course: EN 162- Analog Circuit Design. Spring, 1987 (Teaching Assistant)

Professional Affiliations

Sigma Xi, Tau Beta Pi, Association for Computing Machinery, American Economic Association, INFORMS, Association for Information Systems

Students Supervised

Dissertation Supervisor

Eli Snir (2001): Lecturer, Washington University
Pei-Yu (Sharon) Chen (2002): Professor, Arizona State University
Guodong (Gordon) Gao (2005): Associate Professor, University of Maryland
Xinxin (Mandy) Li (2005): Associate Professor, University of Connecticut
Prasanna (Sonny) Tambe (2008): Associate Professor, Wharton School
Fujie Jin (2016): Assistant Professor, Indiana University

Thesis Reader

Bin Gu (2002): Professor, Arizona State University
Il-Horn Hann (2000): Professor, University of Maryland
Michael Jacobides (2000): Professor, London Business School
Jeff McCullough (2005): Assistant Professor, University of Minnesota
Ying Liu (2006): Assistant Professor, University of Hawaii
Ben Powell (2003): Unknown
Michael Row (2001): Private Industry
Baba Prasad (2003): Unknown
Mei Xue (2001): Associate Professor, Boston College
Matt Thatcher (1999): Assistant Professor, University of Nevada (Las Vegas)
Shinyi Wu (2003): Assistant Professor, Arizona State University
Moti Levi (2001): Private Industry
Antonio (Toni) Moreno-Garcia (2012): Assistant Professor, Northwestern University
Sergeui Roumanitsev (2006): Private Industry

Marcelo Olivares (2007): Associate Professor, Columbia University
Ben Shiller (2011): Assistant Professor, Brandeis University
Adam Saunders (2011): Assistant Professor, University of British Columbia
Fangyun (Tom) Tan (2011): Assistant Professor, Southern Methodist University
Vihbahshu Abhishek (2011): Assistant Professor, Carnegie Mellon University
Hessam Bavafa (2013): Assistant Professor, University of Wisconsin
Yili (Kevin) Hong (2013): Assistant Professor, Arizona State University
Dokyun Lee (2014): Assistant Professor, Carnegie Mellon University
Jing Peng (2015): Assistant Professor, University of Connecticut
Bowen Lou (2019): On academic job market

Other Doctoral Advising

Fujie Jin (2013): Summer Paper Advisor, Primary Academic Advisor
Amanda Jensen (2010): Summer Paper Advisor
Felipe Csaszar (2005): Academic Advisor
Ozge Yapar (2015-6): Independent study supervisor
Kayoung Choi (2015): Summer Paper Advisor
Etiye Cansu Erol (2019): Summer Paper Advisor

Masters Students

Xiaoge Zhou, OPIM Department, Wharton School (1999-2001): Thesis Supervisor
Jihae Wee, School of Engineering and Applied Science (2003): Project Supervisor
Zhu Lu, College of Arts and Sciences (2014): Thesis Supervisor

MBA Students

Anna Blaczyck, Wharton School (2004): Independent Study Project Supervisor
Luca Coltro, Wharton School (1997-1998): Advanced Study Project Supervisor
Andrew Trader, Wharton School (1999): Advanced Study Project Supervisor

Undergraduate Students

Steven Altman, Wharton School (1997): Independent Study Project Supervisor
Maury Apple, Wharton School (1997): Independent Study Project Supervisor
Tara Bhandari, Wharton School (2002): Society Project Supervisor
Thomas Burrell, Engineering School (2001): Senior Project Supervisor
Todd Bishop, Wharton School (1999): Independent Study Project Supervisor
Rachel Boim, Wharton School (1999): Independent Study Project Supervisor
Hope Bromley, Wharton School (2000): Independent Study Project Supervisor
John Chiang, Wharton School (2001): Society Project Supervisor
Charlene Chen, Wharton School (2005): Senior Design Project Supervisor
Robert Dolan, Wharton School (2003-4): Wharton Research Scholars Supervisor
Ronak Gandhi, School of Engineering (2013): Senior Design Project Supervisor
Gabriel Gottlieb, School of Engineering (2002): Senior Design Project Supervisor
Phuong Ho, Department of Economics (1998): Honors Advisor
Richard Hooper, Systems Engineering (1999): Independent Study Project Advisor
Hunter Horsley, Wharton School (2015): Independent Study Project Advisor
Melinda Hu, Wharton School (2018-2019): Wharton Research Scholars Advisor
Pawel Hytry, Wharton School (2011-2012): Independent Study Project Advisor
Ulhas Jagdale, School of Engineering (2013): Senior Design Project Supervisor
Johnny Kong, Wharton School (2005): Senior Design Project Supervisor
Amin Laksmani, Computer Science and Engineering (2010): Senior Design Supervisor
Henrique Laurino, Wharton School (2018): Senior Thesis Supervisor

Jacob Lefkowitz, Wharton School (1998): Society Project Supervisor
Steven Levick, Wharton School (2012): Independent Study Supervisor
Brandon Newberg, Wharton School (2012): Independent Study Supervisor
David Perez y Perez, Wharton School (1999): Independent Study Supervisor
Nickhil Ramchandi, Wharton School (1999): Independent Study Supervisor
Reuben Randolph, School of Engineering (1998): Project Supervisor
Kevin Reeves, School of Engineering (2001): Independent Study Project Supervisor
Allison Rosen, Wharton School (1997): Independent Study Project Supervisor
Jennifer Seo, School of Engineering (2000): Senior Design Project Supervisor
Kyle Smith, Wharton School (2001): Independent Study Project Supervisor
David Thornton, Wharton School (2005): Senior Design Project Supervisor
Jon Turow, Wharton School (2005-6): Independent Study Supervisor
Udack Victor, School of Engineering (2000): Senior Design Project Supervisor
Jason Wang, Wharton School (1998): Society Project Supervisor
Melinda Wang, Wharton School (2018): Senior Project Supervisor
Christine Wong, Wharton School (1997): Society Project Supervisor

Other Service

University of Pennsylvania

Academic Dishonesty Disciplinary Committee Panel (2012)
Trustees Committee on Academic Policy (2009-2010)
Lindback Teaching Award Committee (1999)

Wharton School

Curriculum Innovation and Review Committee (CIRC) (chair, 2016-20)
Undergraduate Curriculum Evaluation Committee (2014-2016)
Management Department Q-Review Committee, Chair (2013-2014)
Wharton Personnel Committee (2009-2011)
Dean's Advisory Group (2008)
Panel Moderator, Wharton Asia Business Forum (2006)
Undergraduate Curriculum Design Committee (2003)
Ph.D Program Review Committee (2000)
Dean's Council on Education (2001)
WebI Curriculum Development Committee (2000)

Wharton School, Undergraduate Division

Moderator, Wharton Information Technology Career Panel (1997-99)
Graduation Speaker (1999)
Parents Weekend Speaker (1999)
Hauck Teaching Award Committee (2000-01)
Electronic Commerce Concentration Advisor (2000-present)
Wharton/Monitor Corporation Undergraduate Case Competition Judge (2001)
Deans Award for Excellence Committee (2010, 2006)

Wharton School, Department of Operations and Information Management/OIDD

Recruiting Committee (2005, 2006, 2011, 2014, 2016)
Doctoral Admissions Committee (2004, 2005, 2011, 2012-13, 2015-7)
Department Q-Review Committee (1999-00)
Undergraduate Coordinator (1998-01, 2002-2008)
Undergraduate Curriculum Committee (1998-01, 2002-2008)
Department Computing Coordinator (1997)
Department Representative to Wharton Computing (1997)
Department Seminar Coordinator (1996, 2010)

Departmental Tenure Committees (2006, 2013, 2014, 2019)
Wharton School, Public Policy Initiative
Wharton/OSET Foundation Project on the Voting Technology Industry (2016)
Morgan State University
Advising on Curriculum Design (2019).
MIT Center for Coordination Science
Seminar Coordinator (1994)
National Science Foundation
Panelist (1998, 2001, 2003, 2005, 2006, 2015)
Participant in the NSF CISE/SBE Cyberinfrastructure Workshop (2005)
International Conference on Information Systems
Doctoral Consortium Faculty (2006)
Other
MIT Inclusive Innovation Competition Judge (2016)
NYU/CeDER Summer Doctoral Consortium Faculty (2006)

Prior Testimony At Trial, Arbitration or Deposition (last five years)

Wisconsin Alumni Research Foundation v. Apple Inc. United States District Court for the Western District of Wisconsin, Case No: 14cv62.

California Institute of Technology v. Hughes Communications Inc., Hughes Network Systems LLC, Dish Network Corporation, Dish Network LLC, DishNet Satellite Broadband LLC. United States District Court Central District of California, Case No: 2:13-cv-07245-MRP-JEM.

GO Computer Inc. and S. Jerrold Kaplan v. Microsoft Corporation, Superior Court of the State of California City and County of San Francisco, Case No: CGC-05-442684.

Anthony Shamrell et al. v. Apple Inc., Superior Court of the State of California County of San Diego, Case No: 37-2013-00055830-CU-PL-CTL.

William S. Callaway et. al. v. Mercedes-Benz USA, LLC. United States District Court for the Central District of California, Case No. 8:14-cv-02011-JVS (DFMx).

Prosys Consultants, Ltd and Neil Godfrey v. Microsoft Corporation and Microsoft Canada Co./Microsoft Canada CIE. Supreme Court of British Columbia, Vancouver Registry No. L043175.

AVM Technologies, LLC v. Intel Corporation. United States District Court for the District of Delaware, Case No. 15-33-RGA.

Realtime Data LLC d/b/a IXO v. Oracle America, Inc. United States District Court for the Eastern District of Texas, Case No. 6:16-cv-000880RWS-JDL and 6:15-cv-00467-RWS-JDL.

Marc Opperman et. al. v. Path, Inc. et. al. United States District Court for the Northern District of California, Case No. 13-cv-0453-JST.

Realtime Data LLC v. Rackspace US, Inc., NetApp, Inc., and SolidFire LLC, United States District Court for the Eastern District of Texas, Case No. 6-16-cv-00961.

Carl Zeiss AG and ASML Netherlands B.V. v. Nikon Corporation, Sendai Nikon Corporation, and Nikon, Inc., United States District Court for the Central District of California Case No. 2:17-cv-03221-RGK (MRWx).

Buckeye Tree Lodge and Sequoia Village Inn, LLC, and 2020 O Street Corporation, Inc. D/B/A The Mansion on O Street v. Expedia, Inc., Hotels.com, L.P., Orbitz, LLC, Venere Net S.R.L. DBA Venere Net, LLC and Expedia Australia Investments PTY LTD. (class action). United States District Court for the Northern District of California, Case No. 3:16-CV-04721-VC.

California Opt Out Arbitrations in VW Diesel Emissions Litigation.

Michelle L. Pennings v. Drew Ford dba Drew Volkswagen.

Laura A. Frerking and Roberts J. Frerking v. Dirito Brothers Walnut Creek, Inc. Caleb A. Lugliani v. Dirito Brothers Walnut Creek, Inc.

Michael J. Taylor and Vicky M. Taylor v. Circle Motors, Inc. dba South Bay Volkswagen
Taner Pamuk & Sarah D. Hartmann v. M&M Automotive Group, Inc. dba Volkswagen of Oakland.

Ian J. and Penny L. Bernard v. Community Auto Group, Inc. dba BMW Santa Maria.

Katrina M. Manos v. J.C.H Investments, dba Murietta Volkswagen

Timothy Hassett v. Q&S Automotive LLC, dba Audi Oakland

Michael T. Ina and Vickie S. Ina v. Porsche Cars North America, Inc. and Sonnen Motorcars, LLC

Steve Duke v. Central Valley Automotive, dba Central Valley Volkswagen

Evan Lippincott & Emily Lippincott v. PAG Santa Ana AVW, Inc. dba Audi South Coast

David L. Felix and Luis M. Felix v. Volkswagen Group of America and Union Volkswagen.
Superior Court of New Jersey: Union County Division, Case No. UNN-L-0053-16.

The California Institute of Technology v. Broadcom Limited, Broadcom Corporation, Avago Technologies Limited, Apple, Inc. and Cypress Semiconductor Corporation. United States District Court for the Central District of California, Case No. 2:16-cv-3714-GW (AGRx).

Riley Johannessoehn, et al., v. Polaris Industries Inc. (class action), United States District Court District of Minnesota, Case No. 0:16-cv-03348-PJS-LIB.

Route1 Inc. v. Airwatch LLC., United States District Court for the District of Delaware, Case No. 17-331-KAJ.

Dolby Laboratories Licensing Corporation and Dolby Corporation AB v. Adobe Systems Incorporated. United States District Court for the Northern District of California, Oakland Division, Case No. 3:18-cv-01553-YGR.reit

Jennifer Reitman et. al. v. Champion Petfoods USA, Inc. and Champion Petfoods LP. United States District Court for the Central District of California, Western Division, Case No. 2:18-cv-01736-DOC-JPR.

Scott Weaver v. Champion Petfoods USA, Inc. and Champion Petfoods LP. United States District Court for the Central District of California, Western Division, Case No. 2:18-cv-01996-JPS.

Kimberley Laura Smith-Brown et. al. v. Ulta Beauty, Inc. and Ulta Salon, Cosmetics and Fragrances, Inc. United States District Court for the Northern District of Illinois, Eastern Division, Case No. 1:18-cv-610.

In Re: Sonic Corp. Customer Data Breach Litigation, (Financial Institutions)
United States District Court for the Northern District of Ohio Eastern Division at
Cleveland, Case No: 1:17-md-02807-JSG.

Materials Relied Upon

Pleadings and Produced Materials

2019.10.14 Dealer Invoice Summary(1199367.1).xlsx

Deposition of Bassam Hirmiz, November 5, 2018

Deposition of Christopher Hemberger, April 15, 2019

Deposition of Derek Long, June 4, 2019

Deposition of Donald Klein, October 2, 2018

Deposition of Edward M. Stockton, M.S., February 7, 2020

Deposition of Jason Counts, October 1, 2018

Deposition of Jason Silveus, October 24, 2018

Deposition of John Miskelly, October 31, 2018

Deposition of Oscar Zamora, May 12, 2019

Deposition of Thomas Hayduk, November 16, 2018

Expert Report of Edward M. Stockton, M.S., October 28, 2019

First Amended Class Action Complaint, *Jason Counts et al., individually and on behalf of all others similarly situated, Plaintiffs, v. General Motors LLC et al., Defendants*, June 11, 2018

GMCOUNTS000102849–852

GMCOUNTS000102931–933

GMCOUNTS000103021–023

GMCOUNTS000103156–160

GMCOUNTS000103400–402

GMCOUNTS000103728–731

GMCOUNTS000862201

GMCOUNTS000864396

GMCOUNTS000866744

GMCOUNTS000873098

Plaintiff Bassam Hirmiz's Responses and Objections to General Motors LLC's First Set of Interrogatories, August 24, 2018

Plaintiff Counts' Responses and Objections to General Motors LLC's First Set of Interrogatories, June 28, 2017

Plaintiff Derek Long's Responses and Objections to General Motors LLC's First Set of Interrogatories, May 17, 2019

Plaintiff Hayduk's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 11, 2017

Plaintiff Hemberger's Responses and Objections to General Motors LLC's First Set of Interrogatories, October 18, 2018

Plaintiff Jason Counts' Responses and Objections to General Motors LLC's Second Set of Interrogatories, August 23, 2018

Plaintiff Klein's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 30, 2017

Plaintiff Miskelly's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 20, 2017

Plaintiff Rodriguez's Responses and Objections to General Motors LLC's First Set of Interrogatories, June 26, 2017

Plaintiff Silveus' Responses and Objections to General Motors LLC's First Set of Interrogatories, June 30, 2017

Plaintiff Thomas Hayduk's Responses and Objections to General Motors LLC's Second Set of Interrogatories, August 27, 2018

Plaintiff Zamora's Responses and Objections to General Motors LLC's First Set of Interrogatories, July 20, 2017

PLAINTIFFS004677–678

Produced Backup to Expert Report of Edward M. Stockton, M.S., October 28, 2019

Academic Articles

Ariel Pakes, "A Reconsideration of Hedonic Price Indexes with an Application to PC's," *American Economic Review* 93, no. 5, 2003, pp. 1578–1596

Charles R. Hulten, "Price Hedonics: A Critical Review," *FRBNY Economic Policy Review*, 2003, pp. 5–15, available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=788904

David W. Harless and George E. Hoffer, "Do Women Pay More for New Vehicles? Evidence from Transaction Price Data," *American Economic Review* 92, no. 1, 2002, pp. 270–279

Fiona Scott Morton et al., "What matters in a price negotiation: Evidence from the U.S. auto retailing industry," *Quantitative Marketing and Economics* 9, no. 4, 2011, pp. 365–402

Florian Zettelmeyer et al., "How the Internet Lowers Prices: Evidence from Matched Survey and Automobile Transaction Data," *Journal of Marketing Research* 43, no. 2, 2006, pp. 168–181

Florian Zettelmeyer et al., "Scarcity Rents in Car Retailing: Evidence from Inventory Fluctuations at Dealerships," NBER Working Paper No. 12177, 2006, available at <https://www.nber.org/papers/w12177.pdf>

Hal R. Varian, "Revealed Preference and its Applications," *The Economic Journal* 122, no. 560, 2012, pp. 332–338

James M. Sallee, "The Surprising Incidence of Tax Credits for the Toyota Prius," *American Economic Journal: Economic Policy* 3, no. 2, 2011, pp. 189–219

Kelvin J. Lancaster, "A New Approach to Consumer Theory," *Journal of Political Economy* 74, no. 2, 1966, pp. 132–157

Meghan Busse et al., "\$1,000 Cash Back: The Pass-Through of Auto Manufacturer Promotions," *The American Economic Review* 96, no. 4, 2006, pp. 1253–1270

Nestor M. Arguea and Cheng Hsiao, "Econometric issues of estimating hedonic price functions: With an application to the U.S. market for automobiles," *Journal of Econometrics* 56, no. 1–2, 1993, pp. 243–267

Pasquale Schiraldi, "Automobile Replacement: A Dynamic Structural Approach," *RAND Journal of Economics* 42, no. 2, 2011, pp. 266–291

Pinelopi Koujianou Goldberg, "Dealer Price Discrimination in New Car Purchases: Evidence from the Consumer Expenditure Survey," *Journal of Political Economy* 104, no. 3, 1996, pp. 622–654

Randolph E. Bucklin et al., "Distribution Intensity and New Car Choice," *Journal of Marketing Research* 45, no. 4, 2008, pp. 473–486

Sherwin Rosen, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," *Journal of Political Economy* 82, no. 1, 1974, pp. 34–55

Steven Berry et al., “Automobile Prices in Market Equilibrium,” *Econometrica* 63, no. 4, 1995, pp. 841–890

Steven Berry et al., “Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market,” *Journal of Political Economy* 112, no. 1, 2004, pp. 68–105

Victor M. Bennet, “Organization and Bargaining: Sales Process Choice at Auto Dealerships,” *Management Science* 59, no. 9, 2013, pp. 2003–2018

Walter McManus, “The Link Between Gasoline Prices and Vehicle Sales: Economic Theory Trumps Conventional Detroit Wisdom,” *Business Economics*, 3463, 2007, pp. 53–60

William J. Adams and Janet Y. Yellen, “Commodity Bundling and the Burden of Monopoly,” *Quarterly Journal of Economics* 90, no. 3, 1976, pp. 475–498

Yuxin Chen et al., “A Simultaneous Model of Consumer Brand Choice and Negotiated Price,” *Management Science* 54, no. 3, 2008, pp. 538–549

Books and Book Chapters

B. Douglas Bernheim and Michael D. Whinston, “Supply and Demand” in *Microeconomics* (New York, NY: McGraw Hill Irwin, 2014), pp. 24–34

Jan de Haan and Erwin Diewert, “Hedonic Regression Methods,” in *Handbook on Residential Property Price Indices* (Eurostat, 2013), pp. 49–64, available at <https://www.oecd-ilibrary.org/docserver/9789264197183-7-en.pdf?expires=1590757586&id=id&accname=guest&checksum=6DD4687BADFE11786809A64209CFDAD6>

Jean Tirole, “Product Differentiation: Price Competition and Non-Price Competition,” in *The Theory of Industrial Organization* (Cambridge, MA: The MIT Press, 1988), pp. 277–303

Jeffrey M. Wooldridge, “Multiple Regression Analysis: Estimation,” in *Introductory Econometrics: A Modern Approach* (Boston, MA: Cengage Learning, 2016), pp. 60–104

N. Gregory Mankiw, “Supply and Demand Together,” in *Principles of Microeconomics* (Boston, MA: Cengage Learning, 2007), pp. 76–82

Walter Nicholson and Christopher Snyder, “Economics Models” in *Microeconomics Theory: Basic principles and Extensions* (Mason, OH: Cengage Learning, 2012), pp. 3–19

Industry Report

Futures Market Insights Presentation, “Diesel Compact Car Performance: Tuning and Engine Remapping Services Market, U.S. Industry Analysis 2014-2018 and Opportunity Assessment 2019-2029,” February 2020

Publicly Available Materials

Ben Putano, “Best Practices for Reconditioning Used Cars,” *DealerCue*, November 14, 2018, available at <https://blog.dealercue.com/reconditioning-used-cars>, accessed on May 20, 2020

Chevrolet, “2015 Cruze,” *Dealer eProcess*, available at <https://cdn.dealereprocess.org/cdn/brochures/chevrolet/ca/2015-cruze.pdf>, accessed on June 5, 2020

Chevrolet, “Cruze 2014,” *Dealer eProcess*, available at <https://cdn.dealereprocess.org/cdn/brochures/chevrolet/ca/2014-cruze.pdf>, accessed on June 5, 2020

Consumer Information, Code of Federal Regulations Title 49, pp. 198–255, available at <https://heinonline.org/HOL/P?h=hein.cfr/cfr2013220&i=208>, accessed on June 3, 2020

J.D. Power, “J.D. Power and Nielsen Link J.D. Power Automatic Purchase Information to Nielsen Consumer Segmentation,” June 2, 2014, available at <https://www.jdpower.com/business/press-releases/jd-power-and-nielsen-collaborate>, accessed on June 4, 2020

James Riswick, "Should you trade in your car? How to determine the right trade-in price for your car," *Autoblog*, December 8, 2018, available at <https://www.autoblog.com/2018/12/08/trade-in-vs-private-party/>, accessed on May 20, 2020

Jeff Youngs, "Should I Trade my Old Car In or Sell it Privately," *J.D. Power*, February 24, 2012, available at <https://www.jdpower.com/cars/shopping-guides/should-i-trade-my-old-car-or-sell-it-privately>, accessed on May 20, 2020

John Voelcker, "2014 Chevrolet Cruze Diesel: First Drive," *Green Car Reports*, May 27, 2013, available at https://www.greencarreports.com/news/1084369_2014-chevrolet-cruze-diesel-first-drive, accessed on May 31, 2020

Kelley Blue Book, "2017 Chevrolet Cruze LS Sedan 4D," available at <https://www.kbb.com/chevrolet/cruze/2017/ls-sedan-4d/?vehicleid=420298&intent=trade-in-sell&options=7419036%7cttrue&category=sedan&mileage=45592&pricetype=trade-in&condition=good>, accessed on May 20, 2020

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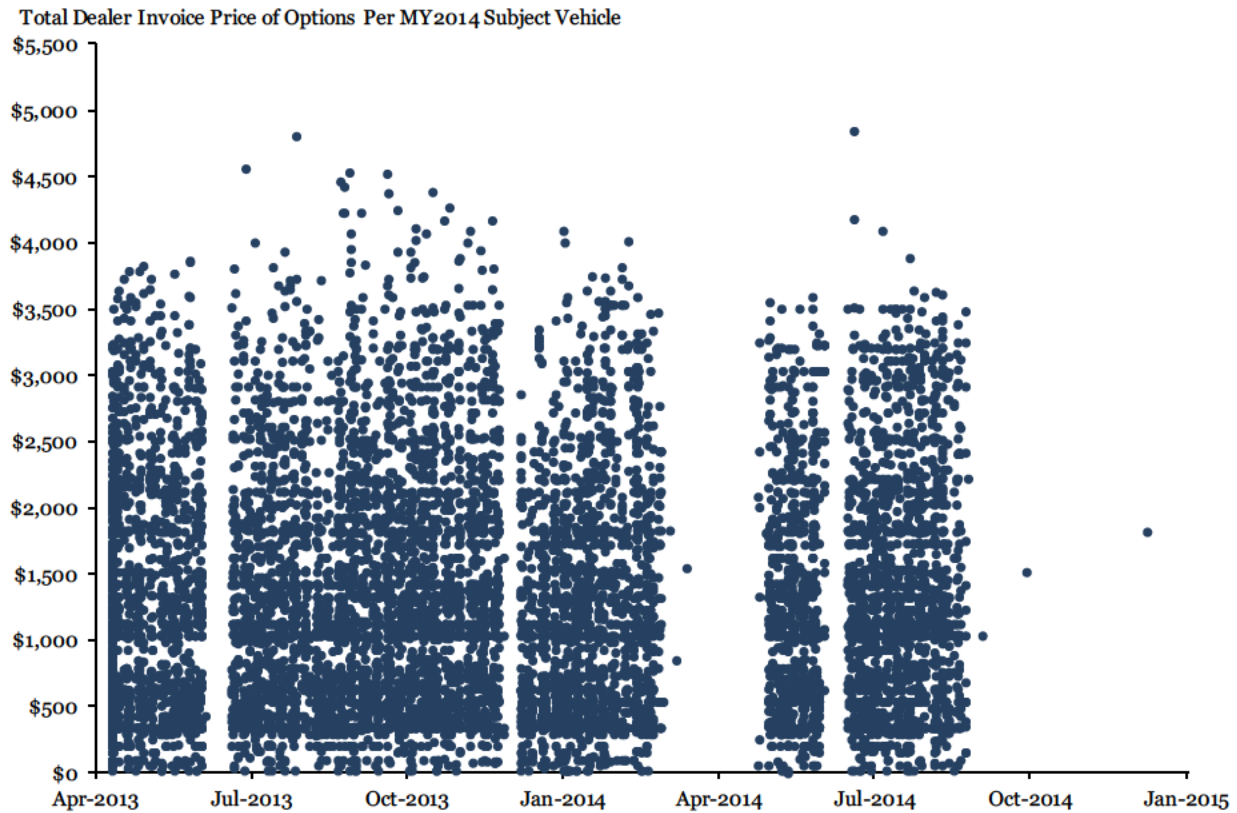
The Plaintiffs purchased Subject Vehicles with a variety of different options

Option	Thomas Hayduk	Christopher Hemberger	Joshua Rodriguez	Derek Long	John Miskelly	Oscar Zamora	Donald Klein	Bassam Hirmiz	Jason Silveus	Jason Counts
2LT Driver Convenience Package	✓				✓		✓	✓	✓	✓
Audio System				✓	✓			✓	✓	
Black Granite Metallic							✓		✓	
Cargo Net			✓		✓	✓	✓		✓	✓
Chrome Body Side Molding									✓	
Diesel Driver Convenience Package				✓		✓				
Enhanced Safety Package								✓	✓	✓
Front and Rear Splash Guards				✓						
Front Fog Lamp Kit			✓							✓
Front License Plate Bracket								✓		
Heater, Oil Pan								✓		
Pioneer Audio System Premium								✓		✓
Power Sunroof										✓
Premium All Weather Mats						✓	✓			✓
Rainforest Green Metallic		✓								

Source: GMCOUNTS000103021–023; GMCOUNTS000103156–160; GMCOUNTS000873098; GMCOUNTS000864396; GMCOUNTS000862201; GMCOUNTS000866744; GMCOUNTS000102849–852; GMCOUNTS000103400–402; GMCOUNTS000102931–933; GMCOUNTS000103728–731

Note: This exhibit only considers options with a dealer invoice amount greater than 0.

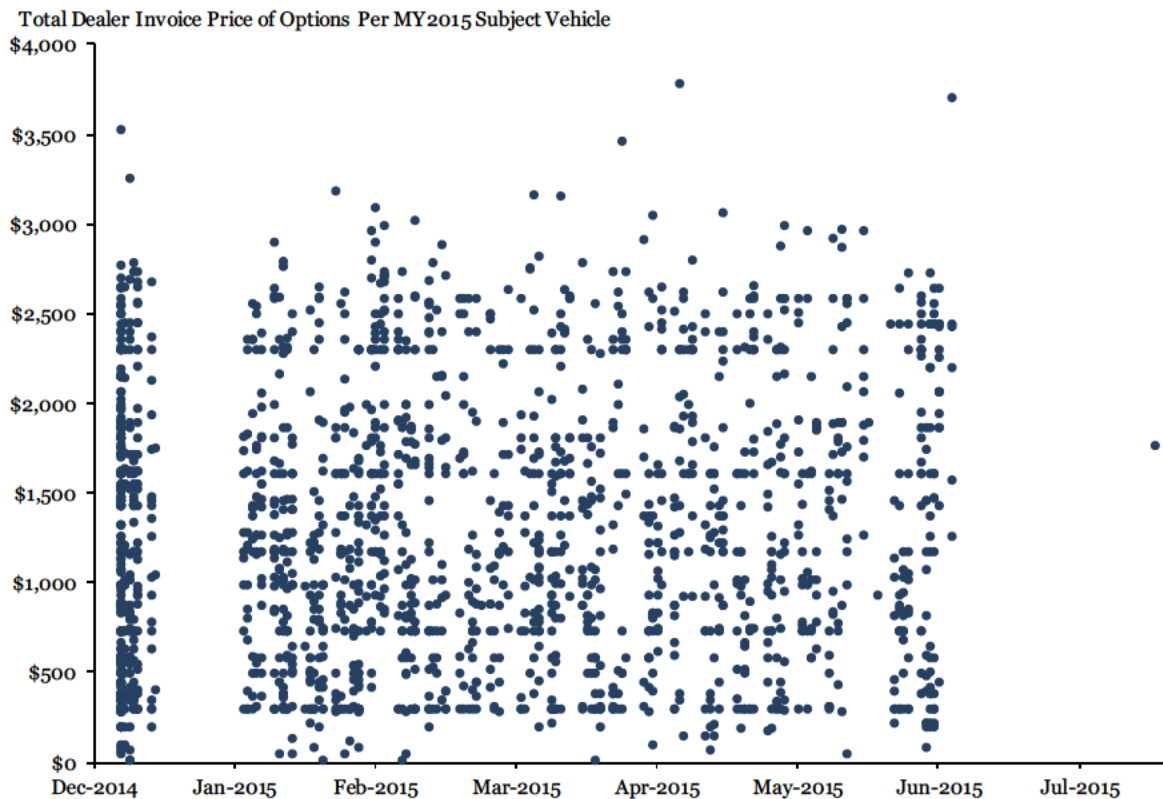
There is significant heterogeneity in the total dealer invoice price of options purchased by those who bought the MY2014 Subject Vehicles



Source: 2019.10.14 Dealer Invoice Summary(1199367.1).xlsx

Note: Dots show the total dealer invoice prices of options purchased for MY2014 Subject Vehicles for which dealer invoices were available.

There is significant heterogeneity in the total dealer invoice price of options purchased by those who bought the MY2015 Subject Vehicles



Source: 2019.10.14 Dealer Invoice Summary(1199367.1).xlsx

Note: Dots show the total dealer invoice prices of options purchased for MY2015 Subject Vehicles for which dealer invoices were available.

Regression sensitivities

Variables	Mr. Stockton's Base Regression	Sensitivity			
		(1) Curb Weight and Horsepower	(2) Curb Weight Instead of Horsepower	(3) Torque Instead of Horsepower	(4) Curb Weight and Torque
(intercept)	9.46517*** (0.04236)	8.68076*** (0.12236)	8.30731*** (0.13228)	9.51708*** (0.04096)	8.61211*** (0.11821)
horsepower	0.00339*** (0.00023)	0.00233*** (0.00026)			
torque_nm				0.00244*** (0.00018)	0.00168*** (0.00018)
curb_wt		0.00034*** (0.00005)	0.0006*** (0.00005)		0.00037*** (0.00005)
diesel	0.2082*** (0.03722)	0.12625*** (0.0362)	0.01703 (0.0392)	-0.05734 (0.03914)	-0.06207* (0.03471)
hybrid	0.37323*** (0.02388)	0.24122*** (0.02933)	0.08205*** (0.02663)	0.32119*** (0.02333)	0.19523*** (0.02594)
chev_diesel	-0.02597 (0.09544)	-0.05917 (0.08759)	-0.01887 (0.1008)	-0.1215 (0.09853)	-0.13366 (0.08737)
year_d	-0.01365 (0.01421)	-0.01439 (0.01302)	-0.02128 (0.01498)	-0.01588 (0.01451)	-0.01552 (0.01287)
chevrolet	0.01919 (0.04508)	-0.09422** (0.04458)	-0.19935*** (0.0495)	-0.03259 (0.04598)	-0.14103*** (0.04294)
ford	-0.0678* (0.03469)	-0.15206*** (0.03414)	-0.17624*** (0.03922)	-0.05601 (0.03533)	-0.15638*** (0.03371)
hyundai	-0.05718 (0.03494)	-0.04458 (0.03207)	-0.01601 (0.03676)	-0.05212 (0.03567)	-0.04115 (0.03166)
kia	-0.16206*** (0.03946)	-0.16859*** (0.03617)	-0.13038*** (0.04138)	-0.15218*** (0.04023)	-0.16583*** (0.03571)
mazda	0.00233 (0.03258)	-0.00924 (0.02991)	0.00593 (0.03441)	-0.02556 (0.0336)	-0.03156 (0.0298)
mitsubishi	-0.01227 (0.03948)	-0.09738** (0.0383)	-0.07281* (0.04402)	-0.05909 (0.04179)	-0.14594*** (0.03859)
nissan	-0.13605*** (0.04332)	-0.18231*** (0.04028)	-0.24824*** (0.04561)	-0.17113*** (0.04407)	-0.20925*** (0.03936)
subaru	0.01471 (0.03037)	-0.05965** (0.02992)	-0.06662* (0.03447)	0.00432 (0.03128)	-0.07887*** (0.0296)
toyota	0.06331** (0.0291)	0.04025 (0.02688)	-0.00316 (0.03046)	0.0477 (0.02962)	0.02892 (0.02636)
vw	0.00319 (0.02997)	-0.05249* (0.02867)	-0.05539* (0.03303)	-0.06806** (0.03212)	-0.11077*** (0.02897)
# of Observations	250	250	250	250	250
Adjusted R-squared	0.664	0.718	0.625	0.649	0.724

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Stockon Production; Wards Auto data; MSN Autos

Note: Mr. Stockton regresses (log of) MSRP on the model year, horsepower, make, fuel type (gasoline, diesel, or hybrid), and an indicator for a Chevrolet diesel vehicle. For the additional regressions, Mr. Stockton's data has been supplemented with Wards Auto data and data from MSN Auto (<https://www.msn.com/en-us/autos/>).